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THE IMPORTANCE OF TEACHING SELF-CONTROL TO ADOLESCENTS IN THE AGE OF ARTIFICIAL INTELLIGENCE

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The technological society has reconfigured the current environment, generating new needs and changing the motivations of contemporary humans. In this context, self-control is one of the essential abilities that can contribute to an active adaptation, on one hand, and to the development of psychological resilience to the speed at which technological evolution influences life, on the other. Starting from a brief presentation of both the ideological roots of conceptions about the perfect society, as well as the scientific sources of artificial intelligence, the article addresses the theme of education adapted to the new trends of technologizing the personal, professional, and social environment and emphasizes the necessity for the educational environment (family, school, civil society) to synergistically contribute to the optimization of self-control in order to form a younger generation that is self-aware and active in the process of making informed decisions.

Keywords: self-control, artificial intelligence, transhumanism, operant conditioning.

INTRODUCTION

Current society is undergoing constant transformation as a result of the evolution of information management methods and production means through the implementation of artificial intelligence (AI) technologies in all fields of activity. Technological progress has outpaced human capacity to understand and adapt to the speed at which changes are being introduced, both in private life through medical recovery devices and household systems, and in social life through the redefinition of interpersonal interactions with the help of social and professional networks in the virtual space. Considering these conditions, the only possibility at a macrosocial level to compensate for this hiatus is through delivering adequate education that forms skills for using advanced technologies and, at an intrapersonal level, develops critical thinking in selecting information and in the decision-making process, on one hand, and updates the self through optimizing self-awareness and self-control in relation to external demands, on the other. The saga

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of the transformation of human society from the stage of industrialization to the technological stage began with the first writings of the 20th century, in 1930 when Walter Lippman was the one who popularized the term "information society." In his book, the American thinker highlights the importance of mass media and information management in influencing public opinion, thus opening an "overton window" towards creating and accepting technological means through which this behavioral molding can be efficient in time and widespread in the population. Beginning with this moment, when the ideology of the new society based on the power of the word was outlined and catalyzed by the simple action of a digital button, there was only one step left to be taken: the creation and imposition globally of information management means. This threshold was reached in the year when private life was gradually transferred to the virtual space through the introduction of social networking applications such as Facebook, Instagram, TikTok, and the recent inclusion of AI networks in all fields established the new operating principles of private and social life in the new technologized society.

Ideas about creating an entity through which their creator can easily achieve certain performance (transhumanist current) or be able to manipulate the behavior of others (artificial intelligence) have existed since ancient times.

* The Golem (Trachtenberg, 2004) is a legendary figure from Jewish folklore, which denotes an artificial being created by a Jewish scholar who manages to bring it to life through the power of magical words written on a piece of paper and inserted into its mouth/forehead. It is represented as a being without emotions or discernment, obedient to its master. In the 17th century in his work „Discourse on the Method," Descartes (1999) presents the human body as a machine, creating a mechanistic perspective on the human being and thus opening the path to exploring the idea of machines and artificial beings in philosophy. His contemporary, Gottfried Wilhelm Leibniz, a German philosopher and mathematician, developed the idea of mechanical calculation and explored the possibility of creating machines capable of performing complex mathematical calculations. He was the first to advance the idea of a universal language of science that could be used to communicate with machines, thus being a precursor of the field of computational thinking and artificial intelligence. • In the 18th century, Swiss craftsman Pierre Jaquet-Droz (Bailly, 2003) built for the first time an automatic humanoid model – The Shepherd – which ingeniously combined clockwork mechanisms, gears, levers, and other complex mechanical components capable of interpreting songs on the piano. The appearance of such automatons stimulated human imagination and the motivation to create humanoid prototypes that could supplant human action in various fields. • Just over a hundred years later, in 1950, British mathematician Alan Turing conceived the Turing Test (2004) to evaluate the ability of a machine to mimic human verbal behavior. The value of this test for understanding the present moment is essential, as it is the first time a device created by a scientist, and it is intended to practically formulate a response to the question "Can a machine think?". From this temporal milestone, technological evolution has shifted towards technological singularity, and currently, artificial intelligence far exceeds human capacity to program it and predict its performances.

If Alan Turing wondered if a machine can think like a human being, surely a second question stems from this: why would humans create such a device capable of eventually substituting their activity. The answer reflects the role that humans play in the evolution of a society that tends to shape its citizens according to the values it imposes. Since ancient times, philosophers have reflected on what an ideal society should represent, both for the evolution and sustainability of the community, and for the personal development of individuals, theorizing a balanced complementary relationship between the two levels. In „The Republic," Platon (2005) creates an ideal state led by philosopher-kings where citizenship is defined by fulfilling one's role within the social mechanism, as a result of virtues shaped through education. Aristotle (2001), unlike his mentor, starts from `eudaimonia` (`human happiness`) as the purpose of life and envisions a society that could be good through cultivating human virtues and applying them through each individual's participation in social life. Both conceptions address the characteristics of the ideal society and highlight the role of education in shaping active citizens contributing to constructing an optimal community.

With the first concerns about what an ideal society should represent and what the appropriate citizen for it should be, human imagination opened for reflection on a prevalent theme in philosophical and scientific thinking throughout history, each idea addressing the theme with a focus either on the social dimension or on the individual one within the community. Two types of approaches have emerged over time: social utopias and dystopias. While social utopias present idealized societies where people live in harmony, equality, and happiness, without social conflicts, with the emphasis on human values such as altruism, understanding, cooperation, and individual emancipation, social dystopias reflect dehumanizing, oppressive societies where the individual is subjugated and controlled by authorities or power structures, and where significant social problems exist (excessive surveillance, lack of freedom, poverty, hunger, inequality, and lack of democracy) characterized by the absence of hope against oppression. The line between the two types of communities is subtle, a utopia easily becoming dystopic when fundamental freedoms of the human being begin to be suppressed under any initial humanitarian pretext.

THE IMPACT OF TECHNOLOGY ON THE INDIVIDUAL

In the context of a society seeking to create a certain type of citizen to serve its goals, technology denotes the efficient means through which the social and material environment is shaped, dictating how individuals are formed to fulfill the community aspirations. „Metropolis" (Harbou, 2015) presents a futuristic society governed by technology where social classes are segregated, and life unfolds under the control and intervention of technology. The future society in „Brave New World" (Huxley, 1932) creates a world where people are genetically modified to be obedient to rulers. In „1984" (Orwell, 1949), advanced technology manages the information provided to citizens to surveil them and subject them to the will of a

totalitarian leader. These are just a few of the possible scenarios of a community based on advanced technology that highlight the dangers it represents to human liberties and rights, raising a series of issues that arise from the impact of advanced technology on the social and private life of contemporary individuals:

1. The impact of technology on social structure is a key factor determining how society is organized. On one hand, advanced technology can contribute to creating an efficient community by using it to optimize human quality of life while respecting their social rights. On the other hand, knowledge and skills in the field of information science can be used to surveil and subjugate individuals when human liberties are dissolved under the initial pretext of humanitarianism, leading to the suppression of fundamental rights.
2. Ethical issues related to technology concern the use of technology in society to modify the human body to optimize certain functions and performance by applying AI devices to various parts of the body, intervening in disease control through genetic engineering, or intruding into individuals' private lives through excessive surveillance.
3. Technology dependence by developing addictions from childhood for devices with social apps, games, programs that shift the fulfillment of regular needs from daily life to the virtual space, thus making individuals easily moldable by AI networks. This dependence can be both positive, improving quality of life, and negative, leading to loss of independence and personal identity, as well.
4. Technological manipulation and control: AI can be used to manipulate and distribute false information online, influencing critical thinking and decision-making. Additionally, current trends of massive citizen surveillance can lead to information censorship, emotional and cognitive manipulation, suspending fundamental rights.

For the current generation of adolescents making their social debut, the changes introduced by artificial intelligence have a significant impact on both the present and future from various perspectives:

1. Technology dependence (video games, social networks, virtual assistants) can negatively affect their social relationships and mental health.
2. Information manipulation (AI can create and distribute false information) can influence critical thinking and decision-making.
3. Confidentiality and security of personal data provided online is difficult to ensure, with the possibility of unauthorized data collection and use by AI systems.
4. Increasing unemployment through activity automation leads to job losses in the future, reducing employment prospects and diminishing chances of economic stability for adolescents (with significantly fewer new jobs created compared to those lost).

THE EDUCATIONAL IDEAL IN THE USE OF TECHNOLOGY

Each type of society has designed an educational ideal that defines the type of individual adapted to the specific material culture and the level of science and

technology development at a certain point in time, and education is the action that personalizes the human model accordingly. Education systems have aligned throughout history with the philosophical ideologies of each historical moment and have aimed to shape generations of individuals who meet the economic support needs of societies on one hand, and ensure personal evolution in terms of adaptation to promoted values on the other. In a technological society, the human ideal is calibrated according to the ideas of the current transhumanist philosophy, which considers the use of technology and science to optimize and extend human capabilities in physical, mental, and emotional aspects. The goal of transhumanism is to expand the limits of human condition beyond the natural ones, on one hand, and to provide opportunities for health enhancement, longevity extension, and cognitive and physical capabilities development beyond the already known limits, on the other.

In addition to this, the values underlying the technological society and, implicitly, the creation of the appropriate educational ideal, are as follows: innovation and technological progress, speed and efficiency, accessibility and connectivity, experience, and knowledge (Ellul, 1964), flexibility, and adaptation (Brynjolfsson and McAfee, 2014). Analyzing the axiological landmarks, the need for human beings to compensate for the specific errors of the limitations of the human body and mind through cybernetic augmentation devices or neural stimulation technologies or machine learning (Kurzweil, 2005) is visible. On the other hand, there is a need to rethink the education system so that the personality it shapes has the behavior that ensures both adaptation to the permanent changes due to continuous technological progress and inner balance. Education is done by configuring the learning of subjects based on elements from the material, social, and cultural environment, creating and strengthening the conditioning between stimuli (physical, cultural, social) and behaviors. Thus, the basic unit of education consists of how the conditioning of expected behavior is thought out by appropriate stimuli.

In 1938, American psychologist Burrhus Frederic Skinner conducted experiments with pigeons that contributed to changing conceptions about how human behavior is constructed through operant conditioning. This is a learning process whereby a person's behavior is shaped by the consequences of their actions. The basic elements of operant conditioning are: voluntary behavior that can be observed and measured; consequences that can be positive (rewards) or negative (sanctions, punishments) or ignoring; means of reinforcing behavior – rewards increase the likelihood of a behavior being repeated, while punishments decrease this probability; reinforcement schedule – the way rewards or punishments are presented can be organized differently: continuous reinforcement, intermittent (rewarding only certain behaviors), or variable (rewards at varying time intervals or frequency); shaping and modeling behavior by using reinforcement and punishment. On the other hand, neuroscience has completed the learning picture by deciphering the brain's reward system (consisting of the nucleus accumbens, amygdala, prefrontal cortex, and other related structures) which contributes to fixing new knowledge in memory by associating it with the

already learned database. In this way, Skinner's basic principles of operant conditioning become guiding principles in creating effective educational means by regulating the ways rewards and sanctions are used in selecting behaviors that need to be reinforced or extinguished.

DISCUSSIONS AND CONCLUSIONS

In the context of the technological society where social and professional interactions take place in the virtual space and everything depends on the simple press of a button that is either confirmed or not by feedback, education plays a major role in adapting young people to the new environment of IT/AI culture from several angles:

– the use of technology in education by training skills for using online educational resources, e-learning platforms, and interactive tools. The principles of operant conditioning are integrated into educational programs to encourage positive behaviors and develop self-control among students;

– critical thinking and information evaluation by developing critical thinking skills and information selection skills;

– adaptability and continuous learning by forming adaptability and self-directed learning skills and optimizing self-control in technology use, essential in managing time and attention in the face of constant distractions. The principles of operant conditioning can be applied to promote self-control in technology use, teaching students to manage their time and limit their use of electronic devices to avoid dependency and the development of compulsive behaviors;

– online ethics and responsibility by promoting awareness and respect for digital rights, as well as developing responsible online behavior, such as protecting personal data and preventing cyberbullying and other harmful online behaviors.

Although life in the technological society may seem easier, considering that human behavior is conditioned by stimuli from the virtual environment, whether they are social media *likes* or benefits received for following rules or completing tasks, or personalized online information based on previous internet activity, the issue of free will that human beings may still have in such a well-designed environment arises. From this perspective, there are several aspects influencing the decision-making process: the large amount of information available online poses difficulties in analyzing and selecting useful information; algorithms used by streaming or social platforms personalize sources based on users' identified needs, filtering and reducing information flows. Although these conditions limit individuals' decisional freedom, education can contribute to correcting this aspect by:

– developing autonomy in thinking by improving the capacity to analyze and select information;

– practicing the ability to reflect on oneself and social empathy in order to recognize the impact of actions on others and engage in prosocial behaviors;

– stimulating responsibility for personal choices and adjusting the personal

value system to that promoted by society;

– developing self-control and emotion management during the decision-making process.

In a society where material culture facilitates satisfying individuals' needs, education is responsible for shaping the younger generations in an Aristotelian sense, "teaching them to be" through actions that equally focus on forming cognitive and practical skills, as well as character development and self-actualization. These three key components of human personality ensure an active integration of the younger generations into the new technologized environment. The future belongs to those who adapt to the speed at which society will implement scientific progress in personal and social life.

„It is not the strongest of the species that survive, nor the most intelligent. It is the one most adaptable to change." (Charles Darwin)

REFERENCES

Aristotel. 2001. *Politica.* Bucuresti: Editura Iri.

Bailly, C. 2003. *Automata – the golden age.* London: Robert Hale Ltd.

Brynjolfsson, E., McAfee, A. 2014. *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*. New York: W. W. Norton & Company.

Descartes, R. 1999. *Discurs asupra metodei,* Bucuresti: Editura Mondero.

Ellul, J. 1964. *The techological society*. New York: Vintage Books.

Harbou, T. 2015. *Metropolis.* New York: Dover Publications.

Huxley, A. 1932. *The Brave New World*. New: Harper Collins.

Kurzweil, R. 2005. *The Singularity is Near: When Humans Transcend Biology*. Viking Penguin. Leibniz, G.W. 1989. *Philosophical essays.* Indianapolis: Hackett Publishing Company.

Lippman, W. 1920 *Liberty and the news*. New York: Harcour Brace & Howe.

Orwell, G. 1946. *Nineteen eighty-four*. Harsinghpur: Sahara Publisher Books.

Platon. 2005. *Republica*. Bucuresti: Editura Antet.

Skinner, B. F. 1938. *The behaviour of organisms.* New York: Appleton- Century – Crofts.

Trachtenberg, J. 2004. *Jewish Magic and Superstition: A Study in Folk Religion*. Philadelphia: University of Pennsylvania Press.

Turing, Alan. 2004. 'Computing Machinery and Intelligence (1950) in B J Copeland (ed.), *The Essential Turing*. Oxford; online edn, Oxford Academic, https://doi.org/10.1093/oso/9780198250791.003.0017

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BODY MASS INDEX AND JOINT MOBILITY IN A GROUP OF ELDERLY PEOPLE FROM ROMANIA

LĂCRĂMIOARA PETRE[1]

Multiple factors are responsible for changes in mobility and health with aging. Chronic pain, fractures or injuries, sarcopenia, obesity, fibromyalgia, osteoarthritis, osteoporosis or neuro-muscular diseases decrease the ability to walk or move in order to function independently. Obesity is one of the comorbidities that decrease the quality of life in old population for both men and women.
Material and methods. The research was carried out online and 224 respondents over the age of 51 were selected for this study. Data were statistically analyzed.
Results. The most common diseases affecting the joints in our study group are arthrosis (14.72%), osteoporosis (12.12%) and lumbosciatics (10.82%). 27.84% of women declared that they suffer from osteoporosis and only 6.67% of men. 36.61% of the subjects are overweight and 30.80% of them suffer from obesity, with a general BMI range between 14.2 and 50.00.
Discussion. In our study group, as in scientific literature, elderly people's mobility is affected mostly by conditions associated with high values of BMI and endocrine disorders.

Keywords: BMI, joint mobility, elderly, disorders

INTRODUCTION

Mobility, as the ability to move or walk freely and easily, is critical for functioning well and living independently. As we age, we may experience changes to our mobility, flexibility, muscular strength, body composition, articular health and metabolic rate. The decline in physical function is common among older adults (Wei *et al*, 2019) and UN predicted that the number of people aged 60 years and above will exceed 2 billion by 2050 worldwide (UN, 2022).

Multiple factors are responsible for changes in mobility and health with aging. In a study carried out in 2019 about the factors that are associated with the risk of falling in old people (>65 years old) it was concluded that neuromuscular factors, pain, memory and executive function are the most important predictors of the risk of falling (Ward *et al*, 2019). Age-related decreases in resting metabolic rates, thermic effect of food and physical activity contribute largely to the gradual increase in body fat and decrease in muscle mass (Sayer *et al.*, 2008).

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The most damaging effect of muscle atrophy is the decreased quality of life from functional disability, increased risk of fractures, decreased basal metabolic rate, and reduced bone mineral density (Jun *et al*., 2023). Other aetiological factors that cause a decline in resting metabolic rates include age-related reduction in lean mass, reduced physical activity, reduced mitochondrial volume and reduced oxidative capacity (Sakellariou *et al*., 2017).

Adults with multimorbidity experience declines in physical functioning, decreased health-related quality of life, and increased disability and mortality risk (Wei *et al*, 2018). Chronic pain, fractures or injuries, sarcopenia, obesity, fibromyalgia, osteoarthritis, osteoporosis or neuro-muscular diseases decrease the ability to walk or move în order to function independently, and the mobility of joints and change the body mass composition (Grimmer *et al*., 2019; Ward *et al*., 2019; Larsson *et al* 2019).

Obesity is one of the comorbidities that decrease the quality of life in old population for both men and women. Body fat increases until the seventh decade of life and thereafter decreases. Sex-specific changes in muscle and fat composition are partly due to age-related changes in estrogen and testosterone. In women, menopause increases body weight and fat mass, specifically in visceral areas, but decreases fat-free mass. Researchers found that the menopause is associated with unfavorable alterations in body composition, which abruptly worsen at the onset and then decrease in postmenopause (Greendale *et al.*, 2019).

The increase in body mass index (BMI) is correlated to the reduction in joint mobility (Belczak *et al*, 2014), especially in the joints of the lower extremities, for both men and women. In an extended review (13 cross-sectional and 15 longitudinal studies), 14 of longitudinal studies showed a correlation between adiposity and declining mobility and that walking, stair climbing and chair rise ability were compromised with obesity, especially if the body mass index (BMI) exceeded 35 kg m^2 (Vincent *et al*., 2010).

In order to prevent these mobility problems that can aggravate the general state of health, carrying out studies and research for the evaluation of joint mobility through the physical examination of the elderly is important for the diagnosis of possible ailments (Luo *et al*., 2024).

Elderly people are generally considered to be those who are over 65 years old, but in this study, we selected people over 50 years old, because many of the mobility problems, diseases and hormonal dysfunctions that can influence the health of muscles, joints and bones appear much earlier.

The purpose of this work is to study the relationship between the body mass index and the occurrence of certain specific conditions that affect joint mobility in people over 51 years old.

MATERIAL AND METHODS

The research was carried out online, using a larger questionnaire about mobility, diseases that affect joint mobility and their treatment methods, within the project „How to increase mobility” carried out together with COPAC in 2023.

224 respondents over the age of 51 were selected for this subset. No personal data was collected and all participants gave their consent to participate in this study and publish the obtained data.

Data on biological sex, place of residence, level of education, height, weight and diseases they suffer from and affect their joint mobility were collected and analyzed statistically.

BMI was calculated in accordance with WHO recommendations (A healthy lifestyle – WHO recommendations, WHO.int/europe) so that subjects were divided into 4 main categories: underweight (BMI <18.5), normal weight (BMI between 18.5–24.9), pre-obesity (BMI between 25.0–29.9), obesity class I (BMI between 30.0–34.9), obesity class II (BMI between 35.0–39.9) and obesity class III (BMI >40).

RESULTS

The subgroup considered for this research consists of 224 people, of whom 86.61% (n = 194) are women and 13.39% (n = 30) are men, aged over 51 years. The respondents mostly come from the urban environment (191, respectively 85.27%) and less from the rural environment (33, respectively 14.73%).

Regarding the educational level of the subjects, the data showed that 14.29% of the respondents have a postgraduate level of education, 33.04% completed their university studies and 45.98% finished high school. Data are shown in Figure 1.

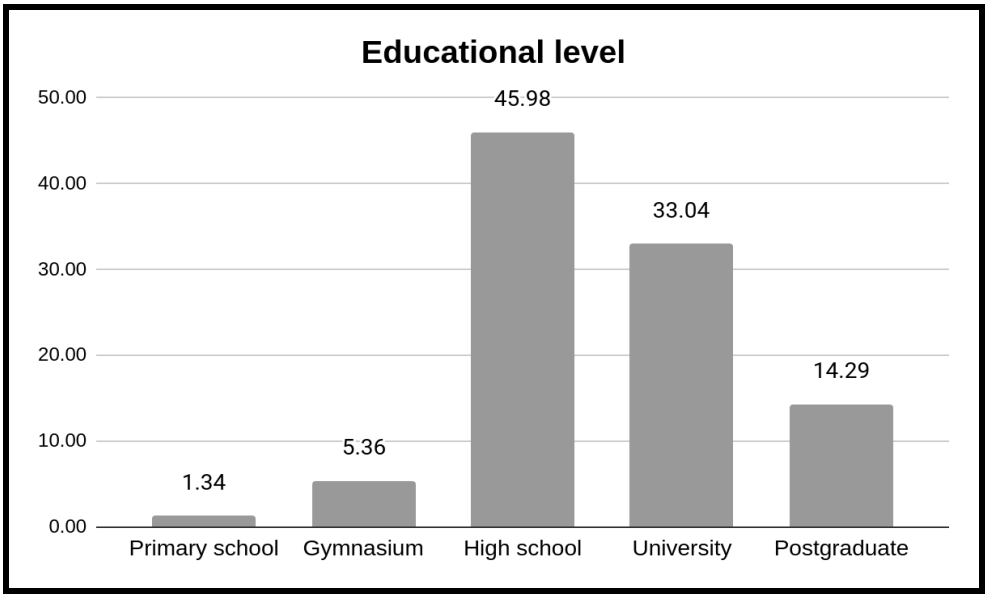

Figure 1: Educational level (%).

We divided the group into 3 age categories in order to have a clearer picture of the composition of the group and the distribution of diseases and body mass index according to age. Thus, in the group there are 83 subjects (37.05%) aged between 51 and 60 years old, 100 subjects aged between 61 and 70 years (44.64%) and 41 subjects aged over 70 (18.30%).

The body mass index was calculated for all subjects and its distribution in the group is illustrated in Figure 2. The mean value of BMI is 27.7 with a range between 14.2 and 50.00, the median is 27.3 and the standard deviation is 5.38.

Only 1.79% (n = 4 subjects) are in the underweight category of BMI, all of them being women between 61 and 70 years old from urban areas. 30.80% of the subjects have a healthy weight, both men and women, from both rural and urban areas. 36.61% of them are pre-obese (BMI between 25 and 29.9) and 30.80% are obese (BMI over 30).

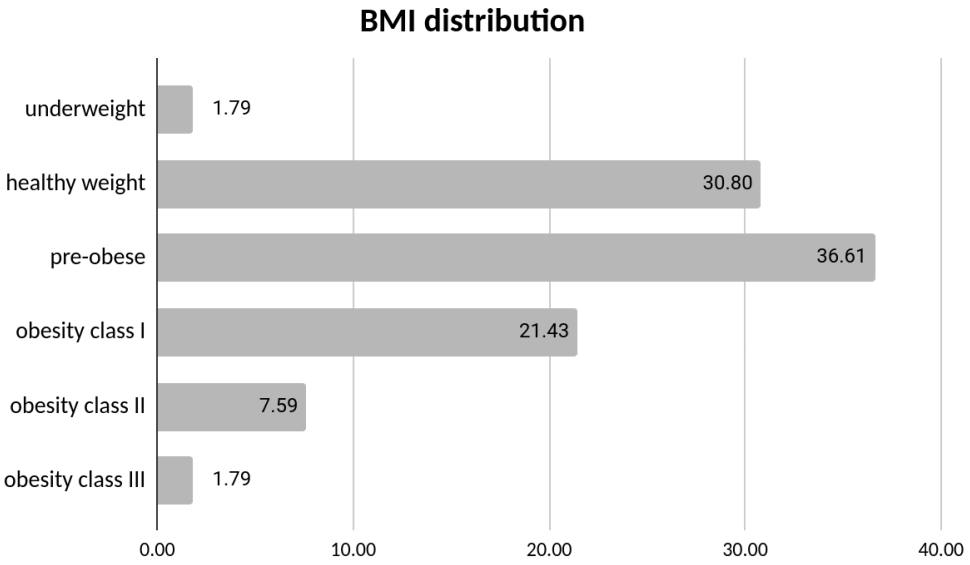

Figure 2: BMI distribution (%).

In the obesity class III there are only 4 subjects, all women, from urban areas. In the obesity class II, there are 17 subjects that represent 7.59% from the entire study sample, mostly women and only 2 men, from all age categories, both from rural and urban environments.

The incidence of conditions related to mobility problems in the group of respondents is represented in Figure 3. The medical conditions are self-declared and the form allows for multiple completion, so that each subject has the opportunity to declare several ailments that they may suffer from, to make the list of illnesses as complete as possible. Thus, the 224 subjects declared a total of 462 ailments, which were statistically analyzed according to age and BMI.

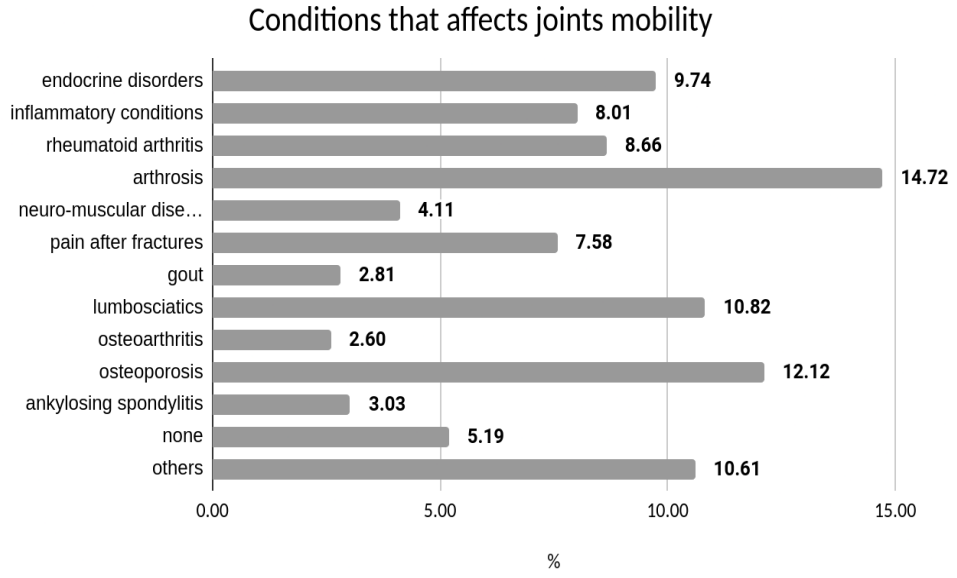

Figure 3: Medical conditions and diseases that affects joints mobility (percentage distribution).

We found that arthrosis, osteoporosis and lumbosciatics have the highest incidences in the studied group (respectively, 14.72%, 12.12% and 10.82%), which was to be expected considering the age of the subjects.

For a deeper understanding of the link between age and certain joint mobility disorders, we studied their distributions by age category. Arthrosis is present in a percentage of 35.29% in the age category 51–60 years, 44.12% in the category 61–70 years and only 20.59% in the category over 71 years.

50% of those who declared that they do not have diseases that affect the joints and muscles belong to the 51–60 age group, 41.67% from the 61–70 group and only 8.33% in the over 71 group. It is interesting that the vast majority of this subgroup are women (only 3 men out of 24 subjects), both from urban and rural areas, and only 37.5% of them have a body mass index in the "healthy" category. The remaining 62.5% have a BMI value greater than 25, falling into the category of pre-obesity (45.83%) and obesity (16.67%). According to research in the specialized literature, obesity, especially in classes II and III, is associated with serious problems in the joints, especially in the lower limbs (ankles, knees), with endocrine disorders, arthritis and osteoporosis.

10.61% of the respondents declared that they have other diseases that affect mobility, not explicitly described în the questionnaire. They were distributed in the 3 age categories as follows: 26.53% in the age category 51–60 years, 38.78% in the age category 61–70 years and 34.69% in those over 71 years old.

The sample distribution on age categories of conditions affecting joint mobility is shown in Table 1.

Table 1.
Distribution on age categories of conditions affecting joint mobility

Age categories	51-60 years		61-70 years		>71 years	
Conditions	N	%	N	%	N	%
endocrine disorders	14	31.11	26	57.78	5	11.11
inflammatory conditions	15	40.54	15	40.54	7	18.92
rheumatoid arthritis	11	27.50	22	55.00	7	17.50
arthrosis	24	35.29	30	44.12	14	20.59
neuro-muscular diseases	9	47.37	9	47.37	1	5.26
pain after fractures	16	45.71	15	42.86	4	11.43
gout	4	30.77	6	46.15	3	23.08
lumbosciatica	15	30.00	25	50.00	10	20.00
osteoarthritis	1	8.33	8	66.67	3	25.00
osteoporosis	15	26.79	27	48.21	14	25.00
ankylosing spondylitis	8	57.14	3	21.43	3	21.43
none	12	50.00	10	41.67	2	8.33
others	13	26.53	19	38.78	17	34.69
total	157	33.98	215	46.54	90	19.48

Osteoporosis, a condition known to be especially associated with elderly women due to hormonal imbalances that occur during pre-menopause and menopause, is declared by 48.21% of subjects in the 61–70 age category, and in smaller percentages in the other two (26.79%, respectively 25.00%). Performing a gender analysis of the distribution of this condition, it was observed that only 6.67% of men declared this condition (2 subjects out of the 30 participants in the study), while 27.84% of women declared that they suffer from this disease. Making a distribution on the 3 age categories, it was observed that almost half of the women aged over 71 suffer from osteoporosis (14 subjects out of 32, respectively 43.75%), 28.09% of the women aged between 61 and 70 years and younger, and 20.55% of women in the 51–60 age group.

Of course, as in the specialized literature, some diseases of the joints and the general mobility of the elderly are associated with the values of the body mass index. That is why we studied the distribution of the main ailments referred in the questionnaire used in this research according to BMI categories in accordance with WHO recommendations. The results, in absolute number and percentages achieved for each individual condition, are shown in Table 2.

The data obtained in our study confirm the data from the specialized literature in which some of these diseases are influenced by a high body weight or obese, so that inflammatory diseases, arthrosis and lumbosciatics increase in percentage in the BMI pre-obese and obesity categories. For example, in the case of inflammatory diseases, there is no subject in the underweight category, there are 18.92% in the healthy weight category, 40.54% in the pre-obese category and 40.54% in the obese category. 38.24% of those who declared that they have arthrosis are in the pre-obese category and 35.29% are in the obese category, but none in the underweight category.

Table 2.
Distribution on BMI categories of conditions affecting joint mobility

BMI categories	underweight (BMI<18.5)		healthy weight (18,5<BMI <24,9)		pre-obese (25<BMI<29,9)		obese (BMI>30)	
Conditions	N	%	N	%	N	%	N	%
endocrine disorders	1	2.22	10	22.22	19	42.22	15	33.33
inflammatory conditions	0	0.00	7	18.92	15	40.54	15	40.54
rheumatoid arthritis	1	2.50	13	32.50	12	30.00	14	35.00
arthrosis	0	0.00	18	26.47	26	38.24	24	35.29
neuro-muscular diseases	1	5.26	9	47.37	7	36.84	2	10.53
pain after fractures	0	0.00	6	17.14	12	34.29	17	48.57
gout	0	0.00	1	7.69	5	38.46	7	53.85
lumbosciatics	1	2.00	12	24.00	18	36.00	19	38.00
osteoarthritis	1	8.33	2	16.67	6	50.00	3	25.00
osteoporosis	2	3.57	23	41.07	20	35.71	11	19.64
ankylosing spondylitis	0	0.00	5	35.71	6	42.86	3	21.43
none	0	0.00	9	37.50	11	45.83	4	16.67
others	1	2.04	13	26.53	17	34.69	18	36.73
total	8	1.73	127	27.49	173	37.45	151	32.68

In Figure 4, we have compared four diseases among those with the highest frequency in the group, for a better visualization of the link with the BMI value. Thus, as can be seen, pain after fractures or injuries increases as a percentage with BMI, the highest percentage (48.57%) being found in the obesity category. Similarly, arthrosis and lumbosciatics have higher percentage values in the pre-obese and obese categories. On the other hand, osteoporosis, known to be more related to hormonal variation and the age of menopause than to weight itself, has a maximum of 41.07% in the healthy weight category, and shows lower values for the pre-obese and obese categories (35.71%, respectively, 19.64%).

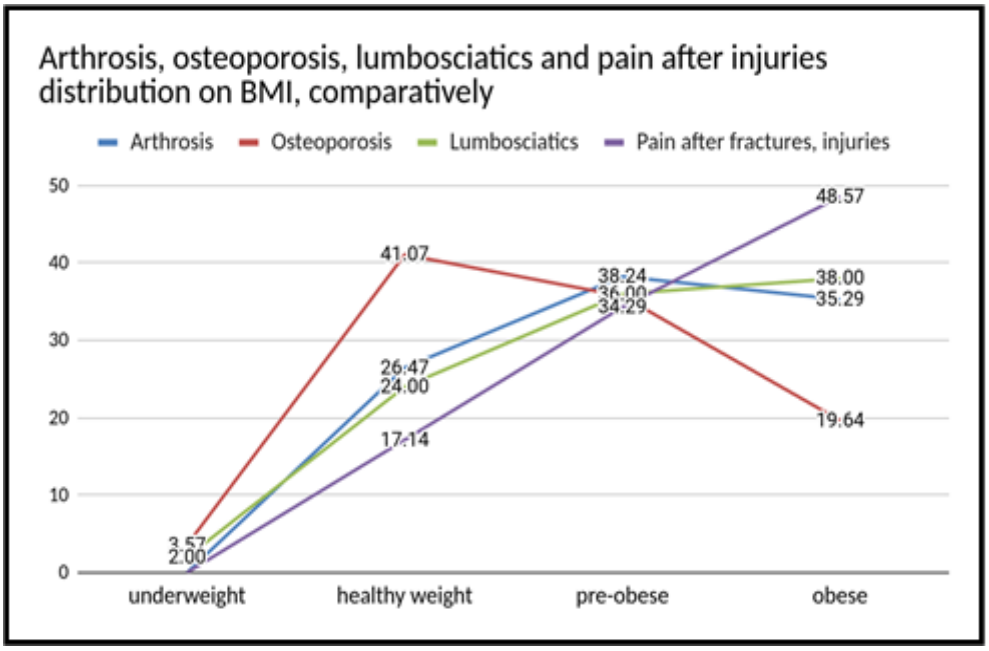

Figure 4: Arthrosis, osteoporosis, lumbosciatics and pain after injuries distribution on BMI, comparatively (%).

DISCUSSIONS AND CONCLUSIONS

The elderly are the most prone to joint disorders due to daily wear and tear, posture, wounds or fractures, or repetitive movements made at work throughout life or intensive sports activities. Also, a series of diseases can create or worsen joint mobility problems in certain joints, thus preventing the respective persons from moving or performing the most usual daily activities.

In our study group, the most common diseases that affect the mobility and health of the joints are arthrosis, osteoporosis, lumbosciatics and endocrine diseases. Obesity also affects the joints, being often associated with arthrosis and lumbosciatics. Endocrine imbalances, found especially in women during peri-menopause, affect the quality of bones and joints and decrease the quality of life of the elderly. In particular, damage to the ankles (hip, knee, ankle) makes it difficult to move, climb stairs, carry out daily activities and increase the risk of falling, which in turn increases the risk of fractures that lead to immobilization for even longer periods of the elderly.

In the studied group, pain after fractures or other types of injuries and lumbosciatics, which are rather mechanical and postural conditions, are two of the reasons quite often stated by the subjects as affecting their joint mobility. They can appear at any age, but the symptoms worsen at older ages, especially if they are not treated properly. Lumbosciatics is an increasingly common condition, even in

young people, due to sedentary lifestyle, poor posture, lack of physical activity or, sometimes, too intense physical activities and without adequate preparation.

Some of the subjects declared that they did not have any of the conditions described as being associated with joint mobility problems, although the calculation of BMI values showed that 62.3% of them had a BMI value greater than 25, which means that they were in the pre-obese and obese categories. It is possible that these people have never been diagnosed with such diseases and do not know that they suffer from any disease, considering the age and the "normal" wear and tear that comes with aging, the pains, the difficulty in climbing the stairs or to perform some self-service or self-care activities. Sometimes, old age is blamed for many ailments that are never investigated, diagnosed, treated so that they become chronic and the respective persons suffer degradation of their health without knowing that the respective ailments could be cured or improved.

As predicted, most of these joint diseases also occur in the 51–60 age group, even if they are not officially considered „elderly". Pain, lumbosciatics, inflammatory and endocrine disorders, arthrosis, neuromuscular diseases, ankylosing spondylitis and osteoporosis still appear at these ages and could be diagnosed, treated or perhaps even prevented more easily, before comorbidities, metabolic disorders or physical wear and tear appear from older ages.

Joint mobility problems, especially in the case of the elderly, require special attention from researchers, doctors and specialists because their independence and quality of life often depends on it. Further studies looking for the causes of the large number of joint diseases in the elderly, as well as ways to diagnose and treat them, are necessary to ensure the well-being and independence of the elderly.

REFERENCES

Belczak CE, de Godoy JM, Belzack SQ, Ramos RN, Caffaro RA. 2014. Obesity and worsening of chronic venous disease and joint mobility. *Phlebology*. 29(8):500-4. doi: 10.1177/0268355513492510. Epub 2013 May 31. PMID: 23761879.

Greendale G.A., Sternfeld B., Huang M.H., Han W, Karvonen-Gutierrez C., Ruppert K., Cauley J. A., Finkelstein J. S., Jiang S. F., Karlamangla A. S. 2019. Changes in body composition and weight during the menopause transition. *JCI Insigh*t. 4(5): e124865. doi: 10.1172/jci.insight.124865

Grimmer M. Riener R., Walsh C. J., Seyfarth A. 2019. Mobility related physical and functional losses due to aging and disease - a motivation for lower limb exoskeletons, *Journal of NeuroEngineering and Rehabilitation*, 16:2, https://doi.org/10.1186/s12984-018-0458-8

Jun, L., Robinson, M., Geetha, T., Broderick, T.L., Babu, J.R. 2023. Prevalence and Mechanisms of Skeletal Muscle Atrophy in Metabolic Conditions. *International Journal of Molecular Sciences*, 24, 2973. https://doi.org/10.3390/Ijms24032973

Larsson L., Degens H., Li M, Salviati L., Lee Y, Thompson W., Kirkland J. L., Sandri M. 2019. Sarcopenia: Aging-Related Loss of Muscle Mass and Function, *Physiological Reviews*, 99(1): 427–511. doi: 10.1152/physrev.00061.2017

Luo J, Zhao D, Gao T, Sun J, Li P, Wang X, Wang X, Chai S, Li J, Zhou C. 2024. Activities of daily living limitations and the use of physical examination among older adults with informal care in China: do gender and residence make differences?, *BMC Geriatrics*. https://doi.org/10.1186/s12877-024-04673-3

Sakellariou G. K., Lightfoot A. P., Ear K. El., Stofanko M., McDonagh B. 2017. Redox homeostasis and age-related deficits in neuromuscular integrity and function, *Journal of Cachexia Sarcopenia and Muscle*. 8(6): 881–906. doi: 10.1002/jcsm.12223)

Sayer A.A., Syddall H, Martin H., Patel H., Baylis D., Cooper C, 2008. The developmental origins of sarcopenia. *The Journal of Nutrition, Health and Aging.* 12(7): 427–432. doi: 10.1007/ BF02982703

United Nations. World Population prospects: 2022. New York: Population Division; 2022

Vincent H.K., Vincent K.R., Lamb K.M., 2010. Obesity and mobility disability in the older adult. *Obesity Reviews* 11(8):568-79. doi: 10.1111/j.1467-789X.2009.00703.x. Epub 2009 Jan 6. PMID: 20059707.

Ward R. E., Quach L., Welch S. A., Leveille S. G., Leritz E., Bean J. F., 2019. Interrelated Neuromuscular and Clinical Risk Factors That Contribute to Falls, *The Journals of Gerontology, Series A: Biological Sciences & Medical Sciences* 74(9):1526–1532 doi:10.1093/ gerona/glz030

Wei M.Y., Kabeto MU, Galecki AT, Langa KM. 2019. Physical functioning decline and mortality in older adults with multimorbidity: joint modeling of longitudinal and survival data. *The Journals of Gerontology, Series A: Biological Sciences & Medical Sciences*. 74(2):226–32. https://Doi.org/10.1093/gerona/gly038.

Wei M.Y., Kabeto MU, Langa K.M., Mukamal K.J., 2018. Multimorbidity and physical and cognitive function: performance of a new multimorbidity-weighted index. *The Journals of Gerontology, Series A: Biological Sciences & Medical Sciences*. 73:225–232. doi:10.1093/gerona/glx114

***WHO, A healthy lifestyle – WHO recommendations, https://www.who.int/europe/news-room/fact-sheets/item/a-healthy-lifestyle---who-recommendations

https://www.doi.org/10.59277/annanthrop.2024.61.03

MUSICAL ENCHANTMENT. AFFECTIVE PRAGMATICS AND THE MAKING OF INTERSUBJECTIVE GRIEF IN *LĂUTARI* FUNERAL PERFORMANCE

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This paper contributes to the expanding body of literature on affective performance by examining, from a semiotic perspective, the role of live musicians (*lăutari*) in the expression and shaping of grief during funeral ceremonies among members of the Roma community in Romania. By conducting a detailed analysis of two funeral performances by Florin Salam, drawn from publicly available sources, this study illustrates how musicians utilize lyrical content with inherent affective potency, and exploit sound iconicity to imbue their vocal communication with emotional resonance. Additionally, the paper explores the use of various forms of pronominal deictic ambiguity by musicians, enabling them to indirectly engage either the entire audience or specific individuals. I show how the pragmatic function of the verbal and non-verbal strategies employed by performers is to transform the affective potentiality of a funeral event into actualized emotions. Furthermore, I emphasize the influence of local social aesthetics on both the actions of musicians and the modes through which participants articulate their emotions. Ultimately, I argue that the emotional impact of an affectively charged performance emerges from a confluence of factors, including vocal technique, discursive practices, musical instrumentation, and social dynamics.

Keywords: affective pragmatics, funeral performance, deictics, Florin Salam, Romania

This paper seeks to contribute to the growing body of literature on affective performance by focusing on the role played by live musicians (*lăutari*) in the making of emotion during funeral events among Romanian Roma community. The *lăutari*, predominantly of Roma ethnicity, have a long history of performing on demand and for remuneration at public events like weddings, betrothals, christenings, village fairs, and funerals (Stoichiță: 2016; 2008; Schiop 2011a; Beissinger 2001; Achim 1997). They see themselves as service providers (Stoichiță 2008: 61), with the payments they receive serving as a direct reflection of their perceived talent. Among live performers, the notion of "talent" is chiefly associated with the capacity to evoke intense emotional responses from the audience. During performances at funeral occasions, typically attended by members of the deceased's extended family, emotional expressions such as tears,

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wails, and mournful cries are commonly observed. Additionally, it is not uncommon for attendees to offer monetary contributions to the singer for the purpose of dedicating songs (*a face dedicații*) to the grieving family members, regardless of whether the latter are within earshot or not during the performance.

This essay examines the affective pragmatics of musical performers hired to sing at wakes and funerals. It investigates the linguistic and extra-linguistic strategies employed by singers to "manufacture emotion" (Stoichiță: 2008), the resulting reactions from the audience, and the social theories underpinning both performers strategies and audience responses. This approach necessitates consideration not only of verbal, lyrical, and musical techniques, but also of the entire interactional context of the performance event. While music may be audible to many, its impact is often directed towards specific individuals. The emotional responses elicited by the performance are always perceived by other social actors, whether physically present, remotely attending via live streaming, or viewing recordings online. Therefore, the focus lies on the performance within its social context, rather than on the hermeneutics of lyrical composition. The aim is to understand the role of musical performance in social settings, rather than viewing music purely as a conveyer of messages.

The paper is structured in three sections. The first outlines a theoretical model that conceptualizes musical performance as a technology of enchantment, aimed at enhancing the affective experience of event participants. It shows that the pragmatic function of performers' verbal and non-verbal strategies is to actualize the emotional potential already inherent in the framing of an event as a performance, and highlights the ways that participants express their emotions are mediated by local social aesthetics. Understanding affective performances requires attention to the entire performance event as embedded in a network of sonic, lyrical, and social interactions. The second section explores the specifics of popular music by demand in Romania and the social aesthetics governing its semantic and performative universe. Professional musicians earn income through live performances, thus their capacity to engender emotions can bear direct economic value. Moreover, given the association of performing by demand with the underworld, the semantic universe of *lăutari* music is shaped by the social aesthetics of the informal economy, encompassing themes of fast money-making, envy, hedonism, and slyness, as well as tropes pertaining to family life, and the love of kin (Schiop, 2017). In the final section, two instances of musical performances are closely examined, both featuring Florin Salam, one of Romania's most renowned *lăutari*. These events, organized by the bereaved families mourning the premature loss of a four-year old daughter and a twenty-one-year-old son respectively, are highly emotionally charged.

A PHILISTINE'S APPROACH TO PERFORMANCE AND EMOTION

Before delving in the world of Romani musical performance and the enhancement of experience that it provides during funeral events, it is essential to

first address two interconnected sets of theoretical considerations. Firstly, I aim to elucidate and disentangle the concepts of 'affect,' 'emotion,' and 'sentiment,' integrating them into a pragmatic understanding of art as a relational technology of enchantment. Secondly, I endeavor to provide further clarification about the ideologies governing the interplay between affective potential, emotional response, and the codification of sentiment. The objective here is to establish a theoretical framework that elucidates the intricate relations between expectations, performance pragmatics, reactions, and the social aesthetics that underpin these dynamics.

In investigating the affective dimension of musical funeral performances, I draw upon Alfred Gell's conceptualization of art and agency (1998; 1992). Gell advocated for a "methodological philistinism" that breaks away from traditional aesthetics, viewing art as a component of technology instead. According to Gell, art, be it sculpture, poetry, painting, or music, functions as a technology of enchantment "oriented towards the production of the social consequences which ensue from the production of these objects" (Gell, 1992: 42–44).

Approaching art solely through evaluative aesthetic judgments would be misleading, as "<aesthetic properties> cannot be abstracted, anthropologically, from the social processes surrounding the deployment of candidate <art objects> in specific social settings" (Gell, 1998: 5- 6). In simpler terms, the "meaning" of art lies in its social effects, and conversely, the social effects of art objects constitute their "meaning". Just as the intricate design of a warrior's shield is crafted with the intention to intimidate an adversary rather than to evoke admiration for its beauty, "part of the essence of performance is that it offers to the participants a special enhancement of experience" (Baumann 1984: 43).

A public musical performance serves as an object of art wherein social relations are (re)established and rendered intelligible within the framework of the event. The focus of music is to evoke emotional responses in the audience rather than being focused on the performer's self-expression. Here, I refer to the performance as a whole – as encompassing everything required to constitute a "distinctive frame" (Baumann, 1984: 10–11) – as an art object in the sense articulated by Gell. The spatial setting, the sound, lyrics, sonic technologies, as well as interactions between the performers, the audience, and other participants collectively shape the event into an art object that elicits emotions by actualizing the potentialities of the affective frame itself. Similar to Steven Feld's observation regarding Kaluli *gisalo* music, where "when textual, musical, and performative features properly coalesce, someone will be moved to tears" (1982: 215), the enhancement of experience provided by a wake performance can be attributed to interplay of coalescing factors.

Concepts such as "affect", "emotion", and "sentiment" are frequently used interchangeably, suggesting a certain slipperiness in the study of affect. While this apparent synonymy may lend itself to varied and inventive expression, it comes at the expense of analytical precision, potentially impeding systematic empirical inquiries. One approach to mitigate such category slippages and make affect more amenable to ethnographic research is to map these otherwise elusive terms onto

Charles Sanders Peirce's (1955) modalities of being. When referring to "affect", I allude to something akin to the "quality of feeling", representing the potentiality associated with Peircean Firstness. The potential for enhancing experience is inherently embedded in the framing of an event (Bauman 1984; Goffman 1981). The concept of frame, as conceptualized by Goffman, functions as a specific type of preposition, a "position-taking that comes before a proposition is stated, determining how the proposition is to be grasped, and thus constituting its interpretive key" (Latour, 2013: 57). The proposition that an event is framed as a wake and that it comes with musical performance delineates specific expectations for all parties involved regarding what is about to follow and about the culturally appropriate behaviors of participants.

However, the affective potential embedded in the prepositional framing does not automatically manifest in practice – performance outcomes can vary widely, ranging from highly successful to disappointing. When discussing of "emotion", I refer to the realization of affective potential in practice. Emotion can thus be viewed as Secondness, representing a raw embodied reaction that can be observed experientially as a signifying relation between observable phenomena (e.g. loud wailing) and the underlying cause (e.g. a performer's high pitch falsetto during a lament). An audience's response to a musical performance may include applause, singing along, showering the artist with money (as is often the case with *lăutari*), but also negative reactions such as booing, whistling, or simply ignoring the performer's efforts – all of which are considered emotional in the context discussed here. The actualization of affective potential into emotion is indexically linked to the agency of the performance, with the main cause of emotional reactions lying within the performance itself. Responses such as applause or booing can thus be interpreted at the intersection of performance expectations and the actual execution of the performance (e.g. offering money to the singer reflects the relationship between the anticipated expectation and the musician's actions).

Given the inherent underdetermination in indexical relations, the interpretation of reactions often requires the mediation of repetition and conventionality, characteristic of Peircean Thirdness. For instance, while whistling during a live show may signify appreciation among American concertgoers, in popular contexts in Romania or Russia, it is likely to convey the opposite. Such differences underscore the importance of local, semiotic ideologies (Keane, 2003) or social aesthetics (Brenneis, 1990) in interpreting indexical relations.

The concept of "sentiment" falls within this category of conventionally bundled emotional indices (e.g. love, as a sentiment is more conventionalized than a feeling of beauty, and such codification is culturally contingent). Expressions of grief may differ among Roma in Romania and middle-class Midwestern Americans, exemplified by acts such as making conspicuous payments to musicians for shoutouts to a deceased child. Similarly, spitting on a dollar bill and sticking it on a *lăutar*'s forehead might be a perfect sign of a positive sentiment of appreciation in a Romanian village, but the same act is likely to be rather offensive to a street musician in Ann Arbor.

An understanding of the semiotic ideology, or the mediating Thirdness in Peircean terms, is crucial not only for external researchers to decipher contextual meanings but is also inherent knowledge that both performers and the audience must possess and act upon. For instance, when experiencing pain, say caused by hitting one's finger with a hammer, the choice between yelling 'ouch' of humming a few measures of Beethoven's Ode of Joy depends on the local interpretative pattern. During a public event like a wake, audience reactions are likely to align with what they consider appropriate, reflecting a shared understanding of emotional displays. To convey grief effectively, individuals must send emotional signals recognized as such. Similarly, performers may employ strategies, such as singing in a creaky voice imitative of crying, to evoke emotional reactions that are interpreted as manifestations of grief.

This discussion, far from being an exercise in Peircean abstraction, holds direct relevance to the subject under consideration. It is reasonable to expect that a performance at a wake is intended to engender heightened emotions. A musician's strategy typically aims at such emotional enhancement, with successful execution likely leading to a transition from potential Firstness to actual emotional reactions. I refer to these strategies as "affective pragmatics". However, the utilization of these pragmatic approaches is not arbitrary. Both performers and audiences are familiar with the expected expressions of emotions and act accordingly. Given that performances at wakes are inherently public acts, a local aesthetic framework governs both the performer's endeavors to resonate emotionally with the audience and the audience's responses to such emotional resonance. As noted by Greg urban (1988: 385) in the context of Amerindian wailing in Brazil, wailing serves both as a means to express emotion and as an expression of a desire for sociability.

Victor Stoichiță astutely highlights that a semiotic framework stressing music-as-message overlooks the dynamic interactions between listeners and participants at events where *lăutari* perform (Stoichiță 2016). An audience-oriented analysis is therefore imperative. Following Donald Brenneis's framework, such an analysis should not only consider the speakers, their rhetorical intentions, and the communicative devices used to convey emotional idioms but also attend to "their audiences and to those local theories and understandings that inform their responses" (1990: 115). In the subsequent section, I delve into the social aesthetics associated with popular music performed on demand, exploring the semantic universe and associated practices. This discussion lays the groundwork for the final section dedicated to funeral performance, emotion and intersubjectivity.

THE SOCIAL AESTHETIC OF POPULAR *LĂUTARI* MUSIC

The musical specialization of a distinct socio-professional category of ethnic Roma in Eastern Europe can be traced back to at least to the 14th century (Beissinger 2001; Achim 1997; also see Lemon 2000 for an insightful discussion of Roma performativity in Russia). Since the early 1990s, live music on demand in Romania has experienced a significant revitalization with the emergence and ascent

of a new musical genre known as *manele*, alongside the traditional village *lăutari* music. *Manele* is predominantly performed primarily by Roma musicians for diverse audiences (Deoancă 2011; Schiop 2011), and shares commonalities in lyrical themes, rhythm, visual and material style with other forms of pan-Balkan ethno-pop such as the Bulgarian *chalga* and Serbian *turbofolk*.

In Romanian, the term *lăutar* is used broadly to refer to a Roma musician who performs on demand and for payment at public or private events. The term *manelist* refers specifically to a lăutar skilled in performing manele: all *manelişti* are *lăutari*, but not all *lăutari* are *manelişti*. While a performer may transition between "classical" *lăutărească* music and *manele*, both listeners and performers differentiate between the two genres based on musical features, semantic universe, and target audience. Classical lăutari music, often described as "music for listening" (*muzică de ascultare*), features a languorous, often melancholic sound, with lyrics addressing themes of suffering, lost love, marriage, and family relations, accompanied by violins and cymbals. In contrast, *manele* songs are distinguished by their upbeat danceable rhythms, use of electronic synthesizers, and lyrical themes revolving around fast wealth accumulation, cunningness (*şmecherie*), violence, enemies *(duşmani)*, envy, betrayal, or revenge.

Emotion-wise, *manele* often encapsulate ideas of power (Stoichiță 2015[forthcoming]: 3), with lyrical elements and sonic registers tailored to appeal to the taste individuals perceived as tough and authoritative (*barosani*), as well as to wannabe mafiosi. For instance, consider the following lyrics: "Many people, when they see me/How I make money, they won't believe it/They say it's something dodgy/Or maybe a lottery tip off/How I make money is secret/Maybe I make them on the Internet/Or maybe I just print them out/For money come to me on a conveyor belt" (Florin Salam – *Iar am pus-o*)[2]. Sonically, *manele* often rely on sound icons evocative of strength and power, such as explosions or engines. A song featuring lyrics like "I am the bomb of all bombs/A boss amongst bosses/The head of Mafia/Don't you measure yourself against me!" (Florin Salam – *Bomba Bombelor*)[3] , is likely to elicit feelings of boastful power not only through the lyrical text, but also through the repetition of the plosive /b/ consonant in the word *bomba* (Stoichiță 2015: 12). In another example, Florin Salam employs the repetition of the rolling /r/ consonant, iconic of revving car engines: "I am a motor with reactor/Boss amongst bosses/And I have a supersonic brain". These sonic and textual strategies are complemented by intense amplification and the use of echo-like delays and reverb effect on the voice, typical characteristics of live performances. A club where *manele* are sang is made, through these amplified sonic icons, into an enchanted space in the confines of which everyone in the audience can, or at least claim to be a *barosan*.

[2] Multă lume când mă vede/Cum fac banii nu mă crede/Zice că-i vreo şmecherie/Sau un pont la loterie/Cum fac banii secret/Poate-i fac pe Internet/Or îi fac la imprimantă/Că-mi vin banii ca pe bandă (Florin Salam, *Iar am pus-o*)

[3] Bomba bombelor/Bossul boşilor/Şeful mafiei/Cu mine să nu te iei! (Florin Salam, *Bomba bombelor*)

During live performances, the boundaries between these two genres may often become blurred. At weddings, for instance, *lăutari* are expected to alternate between songs intended "for listening", and *manele* designed to convey cunningness *(muzică de șmecherie)*, as well as covers of mainstream Romanian pop songs. However, at funeral events, manele are typically avoided, possibly due to their overtly boastful tone, which may be deemed inappropriate in the context of mourning rituals. Instead, *lăutari* perform music intended for attentive listening *(muzică de ascultare)*. In a personal interview, the renowned manele singer Sorin Copilul de Aur elaborated on the distinctive characteristics of *muzică de ascultare*:

> A song for listening, with a paced rhythm, with cymbals and bass, and words about, depends, about brothers, parents, children. These are not for dancing, these are for listening, you simply sit down at the table and listen. You don't dance on it.

In contrast to *manele*, which speak of a world of competition and betrayal, of hedonism and power, *muzica de ascultare* touches upon more domestic social semantics. Despite operating within different thematic registers and being performed at distinct types of events, the audience for both genres typically overlaps. An individual who resonates with the bravado portrayed in manele songs about dominance or shrewdness is also likely to be move by lyrics that reflect their own familiar relationships.

Regardless of whether they perform traditional *lăutărească* music, *manele* or a combination of both, *lăutari* share a common trait: they earn their livelihood through live public performances. While music in the form of CDs is widely available in markets and gas stations throughout the country, and video clips can be viewed on specialized TV stations or streamed online, the primary source of income remains their compensation for live performances. Even when their video clips are broadcast on television, they are typically accompanied by a phone number for booking the artists, and similar advertisements can be found on the sleeves of CDs. Remuneration for *lăutari* typically takes two forms: a pre-agreed sum paid by the event organizers to the singers and their band at the conclusion of the performance (*plată*) and tips or bribe (*bacșiș*, *șpagă*) given directly to the singer by audience members for song requests and dedications. Men in the audience, and sometimes children acting as proxies, approach the performers during their songs and pass them money while whispering the names of the recipients of the dedication and a message. The *lăutar* then relays this information through the microphone, often announcing the amount paid (e.g. This is from my brother Bighi! For Adrian, the godfather, from Bighidiu, two million, three million, five million! – Florin Salam, at a *spoitori* wedding). These displays of wealth and power often escalate in full-blown tournaments of "value" (*valoare*) between male auditors. At funerals, dedications are less common than at weddings or birthday parties, and the amounts paid are rarely announced by the singer (e.g. From my brother, Zair, for Victor's girl, for Viviana, who is with God. May God rest her! – Florin Salam, at a funeral in Bucharest). Acts of "bribing" the singer contribute to the clarification of the ambiguous addressivity in the lyrics being sung. Men give money to *lăutari* to

associate themselves with the "I" in lyrics like "I am the boss amongst bosses", attempting to assert their status and to build wealth in people (e.g. "this goes from Puiu to daddy Nuțu, our boss!"), or sometimes to mock others, whether present or absent (e.g. "For all those who think they have money but they don't, from Americanu', the song "I've done it again", let it be known!") (Stoichiță, 2016: 8).

Therefore, to earn a living, *lăutari* need to please the audience, since by enchanting men, the latter are more likely to open their wide for dedications. I inquired about the popularity of this music from Sorin Copilul de Aur. In his response, after expressing gratitude to God for granting him vocal talents, the singer elucidated the allure of his music by highlighting the influence of music on the audience, emphasizing the effort musicians invest in enabling listeners to "see themselves" in the lyrics:

> "This [musical] genre [manele] is popular because we transmit a lot [by] what we sing. We sing from the soul; we do it with great dedication (drag). It is because of the lyrics because *many recognize themselves in the words.* Like [in] the song 'We weren't born rich/We were poor kids. Many say, 'even if I was poor and I got where I am now, I didn't forget where I started from'. Many appreciate the words and all this. And the rhythms, and many things, because what we are doing is not that easy, you don't just clap your hands and that's it. Behind us is an entire team, with all the instrumentalists. Long hours! You can't just say that you spend half an hour, and the song is done, we record it and tomorrow we're stars. It's difficult. We put in a lot of work and soul into it. (emphasis added)"

During a performance at a wedding of a prosperous *spoitori* family, Florin Salam echoed a similar sentiment. Amidst the overwhelming influx of song requests, he momentarily ceased singing and spoke to his audience through the microphone, while the band sustained the drum-suffused rhythm in the background: "I want to sing for everybody tonight. But that's how it goes when there's a big wedding. You need to stand up for everyone, and I, as an artist, have to please everybody".

As both Florin Salam and Sorin Copilul de Aur suggested, the trade of *lăutari* is all about pleasing the audience, striking an emotional chord by allowing listeners to identify with the lyrics that carry emotional weight. This, in turn, increases the likelihood of the audience making monetary contributions for dedications. However, this endeavor goes beyond just the lyrics. As Sorin Copilul de Aur pointed out, the audience also values "the rhythms and many other things".

On the flip side of the feedback loop, listeners assess the quality of a performance based on the performer's ability to captivate and move them. Upon hearing a "strong" *(tare)* performer, listeners often describe themselves as emotionally exhausted, feeling "torn" *(rupt)*, "shattered" *(spart)*, "killed" (*omorât*), or "chopped up like cabbage" (*făcut varză*) (Stoichiță, 2016: 10-11). Thus, to excel as a virtuoso, a *lăutar* must not only accommodate the audience requests during live performances, as Florin Salam strived to do at the aforementioned wedding, but also

possess the ability overwhelm the audience, to captivate and emotionally drain listeners. In essence, the "talent" of Roma musicians lies in delivering a profoundly emotional rendition of what performance theorist Richard Bauman termed "enhancement of experience" (1984: 38). It is this analysis of affective pragmatics, as demonstrated in two of Florin Salam's funeral performances, to which I now turn.

MAKING GRIEF: FLORIN SALAM'S FUNERAL PERFORMANCES

This section closely examines how a *lăutar*'s performance serves to enchant in funeral contexts, with particular emphasis on how participants are prompted to identify themselves in the lyrics. This process of participant transposition, wherein "speakers make co-present individuals into denoted characters in their stories" (Perrino 2005: 345) is often facilitated through the use of indirect addressivity. While the actions conveyed in the lyrical discourse are relatively straightforward, the attribution of these actions to specific individuals is uncertain outside the performative context (Lempert, 2012: 181). The ambiguity in establishing the actor in the musical discourse, the sender and the receiver of the message animated by the singer, is linked to the utilization of pronominal shifters and their associated verbal, forms which establish indexical relations contingent upon the social configuration of the performance (Lemon, 2000: 228). When singing, Florin Salam consistently employs first and second person pronouns, albeit not in a self-referential manner. As is the case with most shifters, the "I" in the musical discourse becomes a "you" in the public (Lemon, 2000: 26). By utilizing these ambiguous shifters, the performer acts as an animator, as per Goffman's definition of the term (Goffman, 1981), rather than merely a message sender, thereby enabling listeners to become speakers through his performative mediation. The use of such deixis serves a potent poetic device "which can engage the emotions of persons listening to any sort of text" (Felson, 1999: 1-2). The impact of transposition facilitated by the employment of shifters is further intensified by Salam's textual and vocal strategies, which infuse his songs with affective potential, drawing the addressed participants into the emotional realm of the performance.

When Florin Salam transitions from the role of animator to self-reference, he unmistakably signals this change of footing (Goffman, 1981), indicating a shift from indirect to direct addressivity. However, these shifts in stance are not always within his control. Participants at the event may interject his singing with requests, prompting Salam to relay the message through the microphone either in his own name or on behalf of the requesters, or sometimes both. Additionally, other instances in the observed performances demonstrate how the very lyrics that the performer sings are at times constructed dialogically (Irvine 1996; 1990), involving the intervention of either another singer or non-singing participants.

The empirical analysis in this section is based on amateur footage sourced from third-party uploads on YouTube. Both excerpts depict emotionally charged funeral events: one is the wake of a four-year-old girl who succumbed to complications of a congenital disease, and the other is the vigil for a 21-year-old man who passed away following a stroke. Both families are affluent, with certain

members rumored to have ties to the underworld (*lumea interlopă*) operating within the informal economy of Bucharest. Florin Salam, a prominent *manele* singer, has close affiliations with both families, having previously performed for them at various occasions. During the wake of the young girl, Florin Salam was joined by another top-tier manele singer, Sorinel Puștiu. At the vigil for the young man, the performer was seconded by his usual backing vocals. It is important to highlight that in both instances; the performances were conducted in the Romanian language rather than Romani.

Sample 1: A young girl's wake

The wake of the young girl, whom I'll refer to as Viviana[4], was held on the patio of a restaurant in Bucharest. Men formed a circle, with Florin Salam seated alongside his fellow performer, Sorinel Puștiu. Standing behind the seated individuals were other men, some wearing t-shirts adorned with a portrait of the deceased. In the center of the circle, the grieving parents were crouched in an embrace on the ground. There were no visible musical instruments or sound equipment aside from a microphone, which Florin Salam utilized to amplify his voice while singing and communicating with the attendees.

In one of the recorded samples, Florin Salam performed a song titled 'Cine mai deschide ușa' (*Who will open the door now*?), which expressed the sorrow of parting from a loved one who had passed away. Salam himself composed the song and debuted it during a concert dedicated to the memory of his own late wife. Each verse comprised of three short lines, each line posing a lamenting question to the departed individual. After several verses, Salam transitioned into the chorus, which he repeated twice: "Who will open the door now/And smile? For what should I return home? Who will be waiting for me?" Although Salam employed first and second person pronouns in his singing, none of them were self-referential in the context. Throughout the performance, Salam's gaze was notably directed towards the grieving mother of the deceased girl. The woman wailed loudly throughout the song, occasionally pausing her lamentations to recall past interactions with her daughter, Viviana. Salam sang with a strained, creaky voice, often employing a rising pitch and ending lines with a prolonged falsetto vowel. Both the creaky voice and the vowels in falsetto are consistently recognized as icons of crying and wailing cross-culturally (Urban, 1988: 390-391). The microphone amplification was prominently loud during the entire performance, with an added echo effect enhancing Salam's vocals, especially his falsetto.

Consider the following fragment[5]:

Who will open the door now,
And smile?
For what should *I* return home?

[4] I use pseudonyms throughout, save for the names of the performers.

[5] In the fragments analyzed, the interventions from the audience are indented and put between brackets. I highlight in bold where the singer cites these interventions into his own singing. I use italics to indicate the moments when first and second person pronouns operate as shifters.

[Viviana's grieving mother cries: "I've risked my life for her"]
***I* have risked *my* life for her.**

I have risked *my* life for her,
To have *my* Viviana.
[Viviana's mother cries: "On my signature!"][6]
To have *my* daughter,
***I* have given *my* signature.**
But now she broke *my* heart,
For she is leaving from *my* life.
[Sorinel Puștiu whispers to Salam: "Say something with <blight holiday>"]
What a blight holiday,
Taking *my* Viviana away.
Where is *my* little missy?
For *I* am longing for her.

All the money in the world doesn't matter any longer,
Viviana is not alive,
I'd rather *I*'ve been poor,
But be with *my* girl.
Oh, God, *my* Vivi,
She broke *my* heart.
She broke *my* heart.

In this excerpt, the use of third-person pronouns appears to reference the deceased, Viviana, while the first-person pronouns likely address her mother. This inference is supported by the performer's consistent gaze towards the mother and the dialogic nature of the performance.

Florin Salam seamlessly integrated the mother's cries of grief into his song, maintaining the first-person perspective without interrupting his singing. Here, Salam appears to act as both animator and co-author of the musical discourse. As an animator, the lyrics he sings in the first person convey not his own emotions but rather offer a platform to those of Viviana's mother. As a co-author, he adapted a pre-existing song to include the mother's cries, as well as suggestions whispered to him by Sorinel Puștiu. This segment highlights the dialogical construction of the performed discourse and illustrates two interconnected methods employed by Florin Salam to emotionally engage Viviana's mother: by directing his gaze towards her and by incorporating her cries into his lyrics. As a result, the "I" in the lyrics and the "you" in the audience become contextually intertwined, effectively transposing the mother into the role of an indirect speaker immersed in a deeply emotional reaction.

Later in the performance, Florin Salam underwent a noticeable change in footing. Initially, he animated members of the bereaved family, then shifted his

[6] Viviana's mother's reference to a "signature" suggest that she must have signed-off to get her daughter out of the hospital at some point in the past.

focus to his colleague, Sorinel Pușțiu, before transitioning again, this time directly addressing participants using first-person pronouns in a self-referential manner:

[Florin Salam pauses from singing, and addresses the audience]
I want to sing you a song that I sang when Viviana was alive, and she gave a dedication for her parents. I was singing a program and Victor's girl gave me money to sing a song. At Gianina's baptism, remember, my brother Dorian, you were the godfather.

[Sorinel Pușțiu whispers in Salam's ear, inaudible]
My mate, Sorinel asks everybody to forgive him, because he was always with the family, but here he couldn't sing because… It is very difficult, I swear on my mother and my family, for I am a Gypsy it is hard to sing for such grief. One needs to be... Not insane, but too much in control. You just can't. Your voice falters, you can't concentrate… It's a child. Had it been a man who was 50, or 60, maybe it would have been normal, for we all go to God. But when it is about a child, it's hard, please believe me, may your children live! I have been inside, where the girl is, and I saw her… I was with my brother Dorian; I saw your princess. It's hard. But if this is the sign from God that I sing for you in both happiness and strife, I need not think about it, and sing. For we have children too and pray to God to keep them alive. [Applause] Same goes for his [Vespasian's] daughter. She goes to God, she is loved by God, and we must not lose confidence, that's my plea. We must never…We all get there sooner or later…

[Victor, Viviana's father addresses Salam: "Yes, man, but for her it was too soon!"]
You are right, I can never argue with you.

[Victor: From the second she was born, she was an angel. And God said it was her time to go there?]

[Florin Salam resumes singing] (unintelligible)
Listen to *me*, *daddy*,
It is the longing fire of the desert.

[Florin Salam pauses singing, stands up and is handed an American dollar bill by someone in the audience]
From my brother, Zair, for Victor's girl, for Vivi, who is with God. May God rest her! For Victor's grief. […]

[Resumes singing]

In this excerpt, Florin Salam sequentially directed his attention towards Sorinel Pușțiu, then back to himself, then to Viviana's father Victor, and finally to Zair, a cousin of Victor's. Initially, Florin Salam paused his singing to

acknowledge Sorinel Pușțiu's emotional state and excuse him from performing, addressing him by name to clarify who was being animated. He then proceeded to express his own poignant reflections on the inevitability of death. Following this, Viviana's father, Victor, engaged in a dialogue with Salam before the performer resumed singing. The concluding portion of the excerpt is particularly noteworthy. After an emotionally charged discourse by Salam and a heartfelt exchange with Viviana's father, the singer resumed his performance, only to be interrupted again, this time by a man in the audience named Zair. The man handed Salam a dollar bill as a gesture of making a dedication for Victor's deceased daughter and her grieving father. Through this action, Zair, one of Victor's cousins, publicly demonstrated his empathy for the bereaved father, thereby reaffirming their familial relationship.

Sample 2: A young man's wake

The wake for the young man, whom I will refer to as Samir, occurred at the residence of the deceased's family located on the outskirts of Bucharest. Unlike Viviana's wake, this setting featured two large speakers in the background, and Florin Salam was accompanied by a small ensemble of instrumentalists and his usual backing vocalists. Samir's body, dressed in a white suit, lay in a coffin with a transparent glass lid. Florin Salam and Samir's father stood on one side of the coffin, while several women, including Samir's widow, Dana, and his mother, all dressed in black, stood on the opposite side. This core group of family members surrounded the coffin amidst a larger crowd of onlookers. Throughout the performance, Salam utilized the same emotive vocal techniques, including his distinctive creaky voice and falsetto, as he did during Viviana's wake.

The immediate presence of the deceased seemed to allow Salam to expand his repertoire of individuals to be addressed and animated. The performance commenced with brief introductory remarks by the singer, in which he affirmed his close relationship with Samir and mentioned the names of four of Samir's cousins who were unable to attend but had contacted the performer beforehand to ensure their message was conveyed publicly. Subsequently, Salam transitioned into singing his song, *Casa e atât de goală* ("The house is so empty"). Although he retained the chorus from the recorded version of the song, Salam adapted the lyrics to suit the specific context, aligning his nominal references with the familial configuration of the participants:

[Singing commences]
The house is so empty
You are leaving today from my side
You are leaving and never returning
You leave me without joy in life

The house is so empty
You are leaving today from my side

You are leaving, child, and never coming back
You leave me without joy in life

Oh, what an accursed faith
That **I have my heart bereaved**
Oh, why are you my boy
Leaving your daddy
What will I do without you
Moments go by
I enter your room
And see no one.

[Salam speaks: What Samir would say if he (unintelligible) this song. He says like this: Daddy! He says like this:]
May *my cousins forgive me*
Because today *I leave from their side*
Forgive me, for I am sorry
That I have upset you myself
You were like brothers to me
I always asked you to come by
And when I was upset
I couldn't do without you.
[…]
Bring me my boy
To (unintelligible) my soul

Today I'm leaving from his side
And (unintelligible)
Bring me my girl
Today I leave from her side
I leave my boy upset
He doesn't know I'm dead

In this segment, Salam's use of the deictic pronouns "I" and "my" initially appears to index Samir's father (the "I" in the text is juxtaposed with "leaving your daddy"). It seems that the father's identity is assimilated as the indirect speaker addressing his deceased son. The presence of Samir's body and Salam's utilization of temporal and spatial deixis ("today," "the house") seem to intensify the process of affective transposition. Following the first two complete verses, Samir's father collapsed to his knees, unleashing loud wails, and calling out his son's name in anguish.

Salam's portrayal transitions from indexing Samir's father as the indirect speaker to animating Samir himself, thereby making the deceased the implicit speaker who initially communicates with his cousins before shifting to address an unspecified

collective "you," inquiring about his daughter and son. This transition is clearly delineated, as the performer explicitly states during an interruption of his singing that this is "what Samir would say". Throughout this performance, Salam continuously alternated between the perspectives of "I" and "you": Samir as the speaker seeking forgiveness from "my mommy", from "my daddy", from "my cousins"; and Samir's mother urging her son "not to leave your mother alone like the bird".

However, the range of individuals indirectly addressed by Salam's use of deictic expressions extended beyond those physically present. Utilizing a mobile telephone as a medium, Samir's father-in-law later became the focal point of affective transposition through deictic references, consequently indirectly involving Samir's wife, Dana, in the discourse. Dana was thus addressed both as Samir's widow and as her father's daughter through this indirect mediation:

[Salam speaks: Samir, may God rest him, brothers. Our Samir, who remains... (A man hands Florin Salam a mobile phone, and whispers something in his ear). For Mander, Samir's father-in-law, so he can hear these words. Aloo! So, he can hear these words! Hear this, Mander:]

The biggest sorrow,
My heart is in pain,
Because *I* am upset too.
From me you are leaving
To God.

To whom my girl is left,
Since you leave from her side?
Oh, my Samir, Samir mine,
You have torn my soul apart.

To whom my girl is left,
Since you leave from her side?
I keep my (unintelligible)
And my heart is in pain.

Had I been near you,
Ooooooohhh!
My heart is weeping inside me,
When I think of my girl,
Alone like the bird.
You are leaving, Samir, from her side,
Samir.
I have no power
To give you my own days.
I'd give you quarters of my life,

To remain by my girl's side.
I don't have any power,
I would have given you my days,
I would give you three quarters of my life,
To remain by my girl's side.

Oh, Samir, oh, Samir,
You are leaving this world,
To whom you leave my girl,
Alone like the bird.
She remains unhappy,
Alone,
With the children by her side,
Marius and Betania.
Oh, Samir, oh, Samir,
How you are leaving from this world,
You are going to God,
How sad was your destiny…

In the cited passage, Mander, Samir's father-in-law, was metaphorically integrated into the narrative as the central figure laminated onto the "I" in Florin Salam's performance discourse. While Mander listened to the singer's performance over the telephone, Salam sang as though Mander were directly addressing Samir, expressing grief over the loss of his son-in-law. Implicitly, this also conveyed concern for Dana, Mander's daughter and Samir's widow, who was depicted as 'left alone like the bird in the sky,' portraying her as sorrowful and isolated, with only her children for company. This segment elicited a noticeable escalation in the intensity and pitch of Dana's lamentation beside her husband's coffin.

CONCLUSION

The evidence suggests that within Roma funeral contexts, grief is not merely understood as individual states expressed during ritual performances, but rather as emerging within the relational framework of the public event. Emotion is thus situated not within isolated individuals, but within the performance itself. Emotion emerges as a performative relational practice (Brenneis, 1990: 114; Urban, 1988). Musicians rely heavily on lyrics with affective potential and sound iconicity to emotionally charge their sung communication. They also employ various forms of deictic ambiguity to indirectly address either the audience as a whole or specific individual. While performers, such as Florin Salam, use first and second person pronouns and associated verbal forms, these are not self-referential but rather audience oriented. Salam often marks the shift from non-self-referential to self-reference by interrupting his singing or explicitly mentioning his own name. These linguistic devices aim to enable audience members to recognize themselves in the lyrics, thereby transposing them into the roles of speakers or hearers.

However, characterizing performance as solely as "an enterprise of emotional manipulation", as suggested by the performers themselves regarding their slyness and falseness (Stoichiță, 2008: 63), is a rather incomplete explanation. Such an interpretation assumes a unilateral relation between the performer as speaker and the audience as hearers. In practice, performers are not entirely detached from the interactional matrix of the performance event. Rather, the musical discourse is inherently relational: audience members and other singers actively engage with the performer, influencing how the lyrics are constructed.

In this paper, I analysed the relation between musical performance and the expression of grief. Viewing performance as a technology of enchantment allowed for an analysis of Florin Salam's performances as forms of affective pragmatics seeking to actualize the emotional potential embedded within the funeral event's framing. Within this context, the strategies of the *lăutar* appear as pragmatic semiotic devices. To elicit emotional responses, Salam must master not only sonic and lyrical techniques of enchantment, but also navigate the interactional dynamics of the performance event, and be knowledgeable of the social aesthetics governing expressions of sorrow. The emotional efficacy of an affectively charged performance lies at the intersection of vocal technique, discursive practice, musical technology, and social intersubjectivity, all inherent components of the performance itself as an art object.

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REFERENCES

Achim, V. 2004. *The Roma in Romanian History*. Budapest and New York: Central European University Press.

Bauman, R. 1984. *Verbal Art as Performance*. Prospect Heights, Illinois: Waveland Press.

Beissinger, M. 2011. "Occupation and Ethnicity: Constructing Identity among Professional Romani (Gypsy) Musicians in Romania". *Slavic Review*. 60(1): 24–49.

Brenneis, D. 1990. "Shared and Solitary Sentiments: The Discourse of Friendship, Play and Anger in Bhatgaon" In Catherine Lutz and Lila Abu-Lughod (eds.). *Language and the Politics of Emotion*. Cambridge: Cambridge University Press. pp. 113–125.

Deoancă, A. 2011. "Cum au devenit cool manelele". [How manele became cool]. *Playboy Romania*. no. 5(139). (June) pp. 44–49.

Feld, S. 1982. *Sound and Sentiment: Birds, Weeping, Poetics, and Song in Kaluli Expression*. Philadelphia: University of Pennsylvania Press.

Felson, N. 1999. "Vicarious Transport: Fictive Deixis in Pindar's Pythian Four". *Harvard Studies in Classical Philology*. 99: 1–31.

Gell, A.1998. *Art and Agency: An Anthropological Theory*. Oxford: Clarendon Press.
--- 1992. "The Technology of Enchantment and the Enchantment of Technology" In J. Coote and A. Shelton (eds.). *Anthropology, Art, and Aesthetics*. Oxford: Clarendon Press. pp. 40–63.
Goffman, E. 1981. *Forms of Talk*. Philadelphia: University of Pennsylvania Press.
Irvine, J. 1996. "The Indeterminacy of Participant Roles". In Greg Urban and Michael Silverstein (eds.). Natural Histories of Discourse. Chicago and London: University of Chicago Press. pp.131–159.
--- 1990. "Registering Affect: Heteroglossia in the Linguistic Expression of Emotions". In Catherine Lutz and Lila Abu-Lughod (eds.). Language and the Politics of Emotion. Cambridge: Cambridge University Press. pp. 126–161.
Keane, W. 2003. "Semiotics and the social analysis of material things". *Language and Communication*. 23: 409–425.
Latour, B. 2013. *An Inquiry into Modes of Existence: An Anthropology of the Moderns*. Cambridge, Mass. and London: Harvard University Press.
Lemon, A. 2000. *Between Two Fires: Gypsy Performance and Romani Memory from Pushkin to Postsocialism*. Durham and London: Duke University Press.
Lempert, M. 2012. "Indirectness" In *The Handbook of Intercultural Discourse and Communication*. Christina Bratt Paulston, Scott F. Kiesling and Elisabeth S. Rangel (eds.). Oxford: Wiley-Blackwell. pp. 180–205.
Peirce, C. S. 1955. *Philosophical Writings of Peirce*. Justus Buchler (ed.). New York: Dover Publications, Inc..
Perrino, S. 2005. "Participant Transposition in Senegalese Oral Narrative". *Narrative Inquiry*. 15(2): 345–375.
Schiop, A. 2017. *Șmecherie și lume rea: Universul social al manelelor*. Chișinău: Cartier.
--- 2011 "Cum au îngropat elitele României manelele. O poveste cu cocalari" [How the Romanian Elites Buried Manele. A Story with Cocalari]. *CriticAtac* (25 January). https://www.criticatac.ro/cum-au-ingropat-elitele-romaniei-manelele-o-poveste-cu-cocalari/ Accessed 20/01/2023.
Stoichiță, V. 2016. "The Squire in the Helicopter: On Parody in Romanian Popular Music" In Margaret Beissinger, Anca Giurchescu and Speranța Rădulescu (eds.) *Manele in Romania: Cultural Expression and Social Meaning in Balkan Popular Music.* Lanham, MD: Rowman&Littlefield. pp. 163–184.
--- 2008. *Fabricants d'émotion: Musique et malice dans un village tsigane de Roumanie*. Nanterre: Société d'ethnologie.
Urban, G. 1988. "Ritual Wailing in Amerindian Brazil". *American Anthropologist*. 90(2): 385–400.

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RESEARCH REPORT ON TRANSYLVANIAN TRACES IN STARCHIOJD COMMUNE, PRAHOVA COUNTY

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This paper puts into perspective documented episodes of migration in Prahova County, shedding light on historically overlooked aspects. It focuses on the demographic, rural, and urban evolution of settlements in Prahova, particularly exploring migrations from Transylvania to the Prahova region beyond the Carpathian arc. The study seeks to understand the impact of these migrations on villages and towns, examining their influence on the local living environment. Utilizing a historical-anthropological methodology, the research aims to present contemporary traces of these migrants, referred to as "ungureni," and their contribution to the culture of the Prahova region, with specific attention to the settlements of Starchiojd. We will try to analyze available sources related to the history of the Starchiojd commune, with a specific focus on identifying historical "fragments". The primary objective is to investigate the presence of Transylvanian elements and examine their impact on the local space and society within the studied area. Once brought to light and arranged chronologically, these episodes will significantly contribute to the reconstruction and deeper understanding of the local past. During the research process, it is crucial not to isolate the particular space from its historical and geographical context. On the contrary, it should be studied through comparison. This approach allows for the identification of aspects such as the presence of a minority integrated among the locals, cultural exchanges, or influences on indigenous products (songs, legends, toponyms, attire, etc.). These findings can highlight the cultural differences that define the respective community in relation to the majority.

Keywords: historical-anthropology, cultural study, subculture, Prahova County, Starchiojd, ungureni, acculturation.

INTRODUCTION

Over time, on the current territory of Romania, several foreign populations have passed through, leaving a quite observable imprint on the society of that period. However, less discussed are the indigenous populations that only migrated locally. We are talking about a movement of groups of people of different ethnicities or nationalities from within the Carpathian arc to its exterior. In short, this phenomenon, involving migration between the interior and exterior of the

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Carpathian arc, had a greater intensity than one might expect at first glance. Despite the existence of borders, markers of statehood, and implicitly of relatively developed societies, the intracarpathian population could undertake a continuous exchange of people and culture with the extracarpathian area. These were fugitives, traders, or thieves who continuously traversed the commercial routes of the time. In this case, we are referring to the area of the current Prahova county, whose roads in the Prahova Valley and Teleajăn Valley were extraordinarily traveled by these people. Ethnically or nationally, among these „migrants", we find Romanians, Hungarians, Saxons, or Roma.

Migration was, in the beginning, a natural phenomenon, but over time, various events inside or outside the Carpathian arc determined the systematic movement of people. Some of these events had a social nature, involving disadvantage, resistance to military conscription, revolts, or simply economic reasons such as trade. Other causes included transhumance and shepherding. In recent times, the past of Prahova County has been a highly addressed theme in numerous socio-human studies.

The present text aims to bring to light those episodes of migration recorded through documents, with the area of interest being Prahova County. Beyond these, the current proposal also seeks to expose certain historical episodes that have aroused less interest among specialists. These episodes refer to the demographic, rural, and urban evolution of settlements in Prahova. Specifically, we are talking about the migrations of populations from Transylvania to the exterior of the Carpathian arc, with the main study area being the Prahova region. We want to see the impact these newcomers had on the villages or towns in the county and how they influenced the living environment. Through a historical-anthropological methodology, we will try to present to the public the traces that contemporary times still contain regarding the passage of these „foreigners", known as „**ungureni**[2]", and their contribution to the culture of the Prahova region, specifically in the settlements of Starchiojd.

We will reconstruct a microhistory, starting, of course, from known fragments that have been preserved to this day. Microhistory will focus on capturing groups of populations different from the majority, represented by people, events, and stories that constitute an individuality within the seemingly uniform masses. This approach thus acquires an anthropological view, using the survival method predominantly employed by Edward Burnett Tylor and Lewis Henry Morgan. The latter probably inspired Romanian researchers Henry H. Stahl and Traian Herseni, who developed their own version derived from the British method, known today as social anthropology. This method, I would say, is very important for both anthropology and history, making it possible to study the present remnants of past events, such as the displacement of populations, a task that is challenging as there are no direct physical traces.

[2] When we talk about *ungureni* we usually reffer to romanians from Transylvania. Not to be confused with Hungarians (maghiars).

METHODOLOGY

Some background details about the current research

The present study proposes an analysis of existing sources regarding the history of the Starchiojd commune, specifically focusing on the "fragments" of history that can help us understand whether or not there were Transylvanian elements and how they influenced the space and the local society in the studied area. My interest in this topic was sparked by my participation in the symposium „Starchiojd 604," held from July 9 to 10, 2022[3], organized to celebrate the 604 years since the documentary attestation of Starchiojd. During this symposium, after the completion of the proceedings, a tour of the area was conducted, where I noticed that the architectural style of certain wooden churches in the commune seems to be of Transylvanian influence. This fact motivated me to initiate research in order to identify and interpret Transylvanian traces in the mentioned locality, aided by information from Ph.D. researcher Cristian Mușa[4] – a native of the village – who noted certain contrasts regarding the Starchiojd population compared to the rest of the population in Prahova County, and some other discussions with Ph.D. independent researcher Sebastian Ștefănucă[5]. However, the motivation behind this research, following previous similar studies – materialized in articles such as *Migrația în lumea a două văi. Rolul elementului pastoral transilvănean în constituirea orașelor și satelor din arealul văilor Prahovei și Teleajenului*[6] and *Raport de cercetare privind urmele transilvănene în satul Podu Dâmboviței*[7] – was fueled by several conversations with Sebastian Ștefănucă regarding migration themes in general. These discussions opened my appetite for researching Transylvanian migrations in the sub-Carpathian area and the role of migrants in the formation or evolution of several localities in Muntenia.

This motivation also has, as a background, my own passion for local history and microhistory (intending, for example, to create a future monography of my hometown, Băicoi, with the research on Transylvanian migrants revealing many aspects related to the past of my birthplace). In the course of the research I have already conducted, the analysis of Transylvanian traces has highlighted several unknown episodes of local history. As I did then, I will use both edited and unedited sources, in the case of Starchiojd, to provide valuable information on the study's theme. Once these episodes are brought to light and positioned

[3] I can add the experiance gained in the second manifestation called "Starchiojd 605" held last year betwen 19–20 July with the same subject as the first one.

[4] Researcher at "Constantin Brăiloiu" National Institute for Ethnography and Folklore.

[5] Teacher at "Constantin Cantacuzino" Băicoi High School.

[6] "Migration in the World of Two Valleys: The Role of the Transylvanian Pastoral Element in the Formation of Cities and Villages in the Prahova and Teleajen Valleys", *Anuarul societății prahovene de antropologie generală*, nr. 7, Ploiești, Mythos, 2021: 45–70.

[7] "Research Report on Transylvanian Traces in the Village of Podu Dâmboviței", *Anuarul societății prahovene de antropologie generală in honorem Gheorghiță Geană (80)*, București, Eikon, 2022: 223–240.

chronologically, they will contribute to a much broader reconstruction and understanding of the local past. We discover that the microsociety where we were born and carried out a significant part of our activities is, in fact, a world apart from the surrounding communities. Sometimes it is challenging to realize from the beginning that a community under study can be so different from the cultural block to which it belongs, presenting an original heritage (material or immaterial) developed throughout its historical evolution. Examining it, the respective space should by no means be taken out of the historical and geographical context it belongs to; on the contrary, it should be studied through comparison, identifying, for example, a minority lost among the locals, cultural borrowings, indigenous products (songs, legends, toponyms, traditional clothing, etc.) that can differentiate that community from the majority.

RESEARCH METHODS (HISTORICAL)

To provide answers to the questions posed by history, some methodological explanations are necessary. We will employ research methods from the socio-human sphere, encompassing techniques and procedures used in history, sociology, anthropology, or geography. An important method used in this study is comparative analysis, recurrently utilized in all scientific fields. We will discuss a wide range of sources, including primary sources (edited), presenting the historical situation of the studied areas. These sources will be compared to other types of sources, secondary ones, comprising related studies on the topic of Transylvanian migration or simply sources that mention events related to our theme in a superficial manner. Oral accounts will also be included, aiming to complement certain historical or geographical information. Comparison also aids, as mentioned, in discovering several heterogeneous elements lost among the native population, referring to a minority that has merged with the locals over time. In this context, we need to define the source. A (historical) source can be generally defined as a result of human intervention or activity.

By destination, use, origin, or simply existence, a source can be considered suitable for understanding and valorizing a researched historical fact. We refer to a historical source as all those psycho-physical and social relics representing the active process of human activity and simultaneously participating in the development of human social life, relics possessing the capacity to reflect development. Therefore, we extract two important properties of the source artefact: a product of human labor or interaction and a reflector of processes. The source is a means of knowledge that assists the researcher in reconstructing past episodes, the evolution of society, and culture in all its aspects (Topolski, 1987: 223).

Another method that I used is the regressive one, whose goal is the progressive reconstitution of facts related to more distant epochs based on information about immediately subsequent periods. Thus, we start from a generally better-known or well-known period to reconstruct facts related to the time before it, and based on the obtained information, attempts can be made to

reconstruct even earlier historical facts. The degree of certainty of the information obtained using the regressive method is higher for periods closer to the moment we have information from sources and decreases as we move away from it (*ibidem*, 252, 268).

We also find the philological method very useful in establishing historical facts based on linguistic data. In this case, the philological method will be used to determine the origin of certain anthroponyms, toponyms, hydronyms, etc. In addition, we will use the geographic method, also known as the cartographic method. We will use old maps to determine the existence and antiquity of certain settlements, as well as the importance of these settlements for trade routes or transit roads in their vicinity, and whether it is possible that Transylvanian migrants had settled in that area.

DISCUSSION

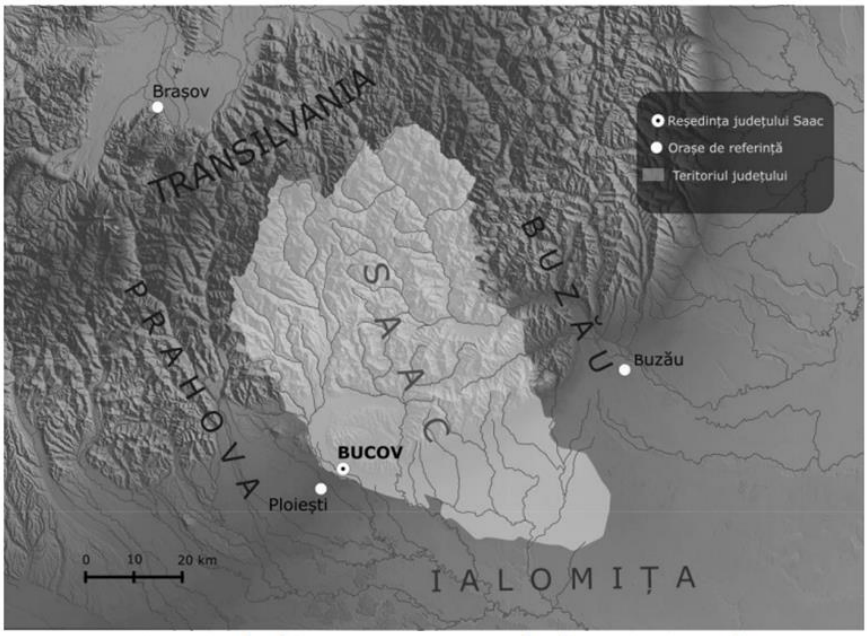
What was Săcuieni (Saac)?

Săcuieni or Saac[8] was one of the medieval counties of Wallachia and was located in the Northeastern part of Muntenia. The County of Saac existed until 1845, when its territory was divided between neighboring counties, Prahova to the West and Buzău to the East. Geographically the old county, encompassed all forms of relief, including significant vineyards and forest resources. At the same time, the county was crossed by the road along the Teleajăn River Valley. To the North, the county bordered Transylvania, with the geographic border lying somewhere along the stretch of road from the point Tabla Buții. According to certain historians like Nicolae Iorga, the name of the county comes from the Transylvanian population that would have **immigrated** to this area, making reference either to Hungarians or Saxons.

Administratively, the border was located at Văleni de Munte, a rather economically important settlement, especially since a significant part of the revenues of Wallachia came from those passing through this border point. Other important settlements in this county were Bucov, Mizil, Tohani, and Urlați. The capital of this county would have been the locality of Văleni de Munte, but due to the political-administrative climate, the location of the capital alternated between Văleni and Bucov.

As far as Starchiojd is concerned, **it** is a settlement located in the Northeast of the former Saac county, now situated in Prahova County, only a few kilometers away from Văleni de Munte. Starchiojd is currently a commune that includes the villages and hamlets of Starchiojd, Valea-Anei, Brădet, Gresia, Rotarea, and Zmeuret.

[8] For more information see Alexandru-Ionuț Cruceru, 2018, *Județul Săcuieni. Studiu de geografie istorică*, București: Editura Universității din București and Marian Coman, 2013, *Putere și teritoriu. Țara Românească Medievală secolele XIV-XVI*, Iași: Polirom, p. 78–100.



"An ipotethic Geographical map of Saac County" by Alexandru-Ionuț Cruceru[9] (Cruceru, 2018: 13).

"The division of the territory of the former Saac County between the two neighboring counties after January 1, 1845" – (Dedu, 2007: 12).

[9] Ph.D. bibliographer, section "Book Cataloging and Classification Service" at Library of Romanian Academy - Bucharest.

The Border and its Roles in the Spread of Influences

From a territorial perspective, the border has served as a natural or anthropic demarcation line used by state entities to delineate their areas of influence. From a cultural standpoint, we observe that the border plays a dual role of separating and uniting a population, a people, a culture. Humanist Frederick J. Turner notes that states and their populations heavily depend on the development of borders (Turner, 1994: 33). This is true because the border serves as a crossing point for goods and, more importantly for the present study, a passage for people and cultural influences. The population most affected by the presence of borders is the marginal population, those living in proximity to the border, often considered by many sociologists as different from the population located further inland, closer to the geographic center of the state.

According to Owen Lattimore's statement from his renowned essay, „Studies in Frontier History: Collected Papers 1928–1958", „It's often, to describe the populations on either side of the frontier, we must take them together as a functionally recognizable community, still institutionally different", (Lamont, Molnar, 2002: 167–195) a concept that can be validated in this case. The border checkpoint at Văleni de Munte[10], near Starchiojd[11], as well as the pathways (which are, in themselves, a natural customs point), have significantly influenced both the local, indigenous population of Starchiojd and those who came from elsewhere. Influences flowed from one side to the other, contributing to the peaceful assimilation of newcomers, whether they were Romanians, Saxons, or Hungarians. In this regard, Nicolae Iorga provides insight into the exchange of influences through the example of craft guilds, whose relationship with traders was crucial. Traders supplied raw materials to craftsmen, and it is understood that the relationship between these two economic agents is characterized by exchanges, including cultural ones (Iorga, 1906: 95, 97).

Through traders or traveling craftsmen, crafts, certain techniques, regionalisms, and other cultural products circulated across the border, either legally or illegally; thus bringing with them a part of their home through their customs or the crafts they knew. In the contemporary period, the border between Wallachia and Transylvania no longer exists, but researchers note the lasting effects of this border. Delving into the past of communities in the former border area, we learn how the respective influences, in our case Transylvanian influences, penetrated the respective area.

Historical Findings Regarding Transylvanian Traces in Starchiojd

The Teleajen Valley has been a highly transition used area by Transylvanian populations, including the **ungureni**. The existence of these population movements

[10] Now, *Valeni de Munte* is a town in Prahova County, but, until 1845, it was a settlement in old Saac County. Valeni de Munte was also a border point between Transilvania (a region in Hungarian, Habsburg, or Austro-Hungarian administration) and the old Walahia.

[11] Also the settlement of *Starchiojd* was a place in old County of Saac, but after de 1845, the place was passed to Prahova County.

between Transylvania and Wallachia has been documented since the medieval period, intensifying between the 18th and 19th centuries. In the current Prahova County, there are still mentions of several towns, villages, or communities that in the past had Transylvanian populations, such as Comarnic, Breaza, Măneciu-Ungureni, Gornet, Lapoș[12], and others. Along the Teleajen Valley, the evolution of villages like Starchiojd is closely linked to the populations that originated from Transylvania. Neighboring localities to Starchiojd, such as Chiojdu[13], Bâsca, Ogretin, Valea Anei, Homorâciu, **Văleni** de Munte, or Măneciu-Ungureni[14], are historically confirmed to have been visited by these migrants from within the Carpathian arc.

In the case of Starchiojd, the settlement could have served as a detour for fugitives from Transylvania seeking to avoid the customs checkpoint at Văleni de Munte. Even the name of the locality bears witness to the influence that Transylvanians had. The first component of the name, "**star**", appears to have local Slavic origins, while the second component, "**chiojd**", could be a term imported from beyond the Carpathians. In the Hungarian language, there are two words from which "chiojd" could have derived **from** through Romanianization: "**koves**" and „"kuvesd," both translating to "**rocky**" or "**stony**." These words are likely derivatives of "**kove**" (or "**keve**", "**kuve**")[15], meaning "**rocky**". Additionally, in **the** German language, there is the word "**Konigstein**," from which „**chiojd**" might derive **from**, possibly referring to a mountainous area. "**Konigstein**" is used for places between mountains, invoking the geological massiveness of the region. In German, with a similar meaning, there is also "**Kopfstein**", meaning "**head/peak/top**" (in the sense of height) or "**through rock**", "**connecting stone**" (probably used as landmark).

Related to names, there is another legend of Starchiojd, discovered/existing in the neighboring commune, *Bătrâni*. It is said about the communes of Bătrâni and Starchiojd that they were founded by an elderly man who descended from the mountains named Chiojdu (in some versions, it is mentioned that he was Tatar), who settled with his family in the area of the two localities. He had two sons. The elder son was married off, and he endowed him with the current area of Starchiojd, hence the hypothesis that the name comes from "**wealthy Chiojdu**" – "**stari-chiojdu**". The younger son received the area named after the legend, **Chiojdul Mic** (Brătescu *et. all*., 1897: 49, 50).

In the village of Valea Anei, a component of the Starchiojd commune, the presence of **ungureni** has been noted over time, a fact remarked upon by several local historians. Although the locality does not have a well-documented history

[12] Comarnic and Breaza are two places found on Prahova Valley. Măneciu-Unguneri, Gornet and Lapoș are also in Prahova, but until 1845 they were settlements of Saac County.

[13] Is a settlement wich is now in Buzău County, but same as the others, it was in Saac, and after 1845 it was passed to Buzău.

[14] Those placese are also old settlements from Sacc County, who are now in Prahova regional administration. Valea Anei is a village part of Starchiojd.

[15] Romanian historian, C.C. Giurescu, found the same similarity (C.C. Giurescu, 1934: 283–285).

(being first mentioned in a document from 1816 – a record in which a possible *ungurean*, Badea, is mentioned), things seem to indicate that the area may have been populated in the past by Transylvanians (Simache, 1968: 135). Additionally, we have observed the presence of several families with the surnames Ungureanu and Ardeleanu. In addition to these, Dionisie Fotino mentions sixteen families with *ungurean* origin, recorded in the 19th century (Fotino, 1859: 153, 154. We have also identified a few other names, including Voicilaș, Sugă, Stanciu, Buruiană, Pântece, originating from the Țârlugeni and Săcele areas[16] (Rachieru, 1996: 89). I would add to these names even those of Mușoiu and Bîra. The name Bîra has persisted in the Muntenia region in the form of Dura(n), a name likely originating from the Apuseni Mountains, encountered in the 19th century in that area as well (Frâncu, Candea, 1888: 117).

RESULTS

Returning to the entire Starchiojd area, the historian Ștefan Meteș proposes a similar hypothesis supported by an observation made by Nicolae Iorga – an account from the early 20th century regarding the surroundings of the locality Văleni de Munte, specifically referring to the Hungarians from the former Saac County: „To this day, their attire, their speech with changed labials, their names, purely mountain-like, their proverbs, and their distinctive nature show where this energetic and persistent population originated" (Iorga, 1911: 65). In the same vein, Ecaterina Zaharescu mentions that the area is populated by people from within the Carpathian arc (Zaharescu, 1923: 157, 168, 171). To support these claims, an older source comes into play, namely the *Geographic Dictionary of Prahova County*, published in 1897, which specifies that in Starchiojd, „the appearance and attire of the inhabitants indicate that they are Transylvanians who arrived under different leaders, forming various groups of peasants" (Brătescu, *et. all*., 1897: 537).

The arrival of Transylvanians in this area is explained by Constantin C. Giurescu as an event that unfolded as early as the early period of Wallachia, maintained in the 16th and 17th centuries. The historian indicates the village of Calvini near the Bâsca Chiojdului Mountains as evidence of the passage of these Transylvanians through the area (C.C. Giurescu, 1934: 285). Building on the hypothesis of historian C.C. Giurescu, we can assume that the ungureni migrated below Calvini[17], towards Chiojdul Mic (now Chiojdu), passing through Starchiojd and heading towards the center of Saac County. An administrative observation supports this, stating that in the early 19th century, in the Chiojd area (in Saac County), there were still between 3 and 13 ungureni families, with the area having access to a trail **connected** to the Văleni and Buzău roads (B.A.R). The number of these families may have increased; in 1833, approximately 400 individuals were

[16] Some places in Transylvania.

[17] Settlement in Buzău County. The name of the village indicates the religious confession of the population and at the same time the Transylvanian origin.

recorded as migrating to Wallachia in the present-day counties of Prahova and Buzău (D.J.A.P.). Additionally, there were likely undocumented illegal crossings. However, there is some doubt about the recorded numbers, given the underdeveloped administration in the region. Some Roma people are mentioned as well, coming from Transylvania and assimilated by the population in the Starchiojd and Chiojdul Mic areas (Brătescu, *et. all*., 1897: 537).

Regarding those populations, we identified them in several documents related to Valea Anei Ungureni (there are documents that make a distinction between Valea Anei Pământeni and Valea Anei-Ungureni[18] from the period 1831–1860, all having an administrative character). During the fiscal censuses of 1831 for the introduction of capitation tax, it was found that there were only 18 households (Pătroiu, Cibotea, 2001: 485[19]) in the village, of Roma ethnicity, and in 1838, during the censuses for the preparation of the *Marei Catagrafii*[20], 26 households and a total of 112 people were recorded (A.N.I.C.) The sources do not provide details to explain why the locality was also called Ungureni; however, we can assume that these Roma either settled on the remnants of an ungurean community or they themselves originated from Transylvania, and attracted by the characteristics of the area, they settled in the Valea Anei village area. There is also the possibility that the name marks the fact that these Roma have **migrated** for a very long time, and the ungurean identity may no longer be assumed due to fear of reprisals, or it may simply have been forgotten. These Roma belonged to the boyar Macovei[21]. Among these names, at least Stanciu, which I mentioned, can be identified as a Roma name from Săcele[22], still existing today.

The studied place is first documented in 1418. However we can assume that the ungureni are either responsible for its foundation or arrived over time, assimilated into the local population, gaining prominent positions locally and influencing certain customs, including the name of the locality. The fact that the name was further exported to Chiojdul Mic (now Chiojdu) when the landowners from Starchiojd left the locality for various reasons is evidence of the continuity in the use of the name. However, we cannot be certain of this, as there is no document attesting the moment when some of the landowners from Starchiojd may have moved. Hypothetically, there is also the possibility that the process happened in reverse, and evidence may have been lost throughout history.

A sudden increase in the population of the village of Starchiojd[23] was recorded between 1831 and 1838, during the censuses for land surveys. In 1831, 170 different households were recorded, totaling almost 600 inhabitants, including

[18] Both Valea Anei-Pământeni and Valea Anei-Ungureni are the two parts of Valea Anei, a settlement part of Starchiojd.

[19] See here Plaiul despre Buzău, județul Saac.

[20] A great fiscal census held in Country of Walahia in 1831 and 1838.

[21] Macovei was a boyar familly who had in past the Starchiojd, and his settlements, as a feudal domain.

[22] Săcele is a town near Brașov.

[23] The data is valid only for the village Starchiojd (the hearth of the area), in the catagraphs the other component villages are reviewed separately.

14 heads of families with noble titles, known in specialized historiography as *boieri de neam*[24]. In 1838, following the census for land surveys, 267 households and approximately 1100 inhabitants were recorded[25]. Judging by the remarkably large number of inhabitants and households in the latter count, we can say that it is a population inflation obtained through migration, not just natural growth. The population surplus could have entered through the two paths from Transylvania, one passing directly through Starchiojd from Mount Călugării, and the other passing through Chiojd from Mount Bâsca (Fotino, 1859: 146, 152). The existence of these paths could strengthen the hypothesis about how the population moved towards Valea Anei Ungureni and Starchiojd, starting from Calvini. Thus, based on the arguments already stated, we can confidently say that it is a population originating from Transylvania through a gradual migration process.

Some arhitectural marks

From an architectural perspective, Starchiojd and its surroundings present certain remnants of the passage or temporary residence of Transylvanian populations. Even if it was a temporary rather than permanent stay, these immigrants could have left some traces of their culture in the researched area. Repeated incursions would have been sufficient for the locals to adopt certain customs, trades, or even products from the newcomers. One of these borrowings concerns the architecture of churches, noting an adaptation of the type I (a)[26] wooden church, specific to the *intracarpathian* area, more precisely the Mureș and Târnava region. This is the wooden church with the dedication to Saint Parascheva, built according to documentary sources somewhere between 1882 and 1885.

Analyzing its elements, we find that the primary material for its construction was wood; the plan is simple, rectangular, and the overall appearance can be placed in the realm of the rectangular peasant house type. This is one of the most adapted construction patterns for churches in the sub-Carpathian area, being the most rudimentary in terms of materials used. Other features include the rectangular altar included in the plan, unpainted, and the circular vault that extends above both the altar and the nave. The walls of the altar and the nave are not raised to the vault, representing another characteristic specific to Transylvanian wooden churches. Externally, the church does not have spires; the bell is housed in a separate tower at the entrance to the churchyard. More recently, a gazebo, locally known as "**șatră**", has been added at the entrance to the place of worship, a characteristic element of churches near Cluj or Sibiu.

This "**șatră**", square in shape and smaller in size than the rest of the plan, serves as a place for funeral services, with the ceremony taking place inside the

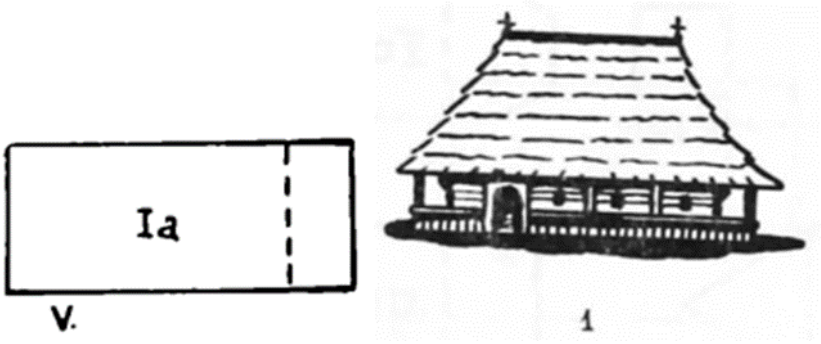
[24] Designation used to indicate wealthy local moors.

[25] *Analele parlamentare ale României*, Tomul II, București: Imprimeria Statului,1892: 485 see *Plaiul despre Buzău, județul. Saac*.

[26] Characteristics of wooden churches in Transylvania can be read and seen in T. At. Popa, „Caracteristicile stilistice ale bisericilor de lemn din Transilvania", *ACTA-MVSEI-NAPOCENSIS, Anuarul muzeului de istorie al Transilvaniei*, nr. X, Cluj, 1973: 695–715.

church. The addition of this gazebo can categorize the church into the style of plan III b – a rectangle that includes the altar, with an extended exit where this gazebo appears, represented by a smaller square space. Also, the detached altar (narrower than the nave, both rectangular) is a characteristic of style I (a), even style III (b). Style III is also very common throughout Romania, with most churches deriving from it.

Considering that the mentioned church was built by the local peasants of Starchiojd – as indicated on the cross in front of the church – we can say that the craftsmen were probably Transylvanians, naturalized people, or simply that they were inspired by a neighboring locality, and Transylvanian influence penetrated so far into Wallachia. Of course, this church model also meets the requirements of the soil and material constraints, using only what was available. From another perspective, the church model may express the population's preference for a modest church, in favor of a more ostentatious stone one, following the paths of early Christianity.



Type 1a and Chruch Saint Parascheva from Starchiojd. Images from personal archive.

CONCLUSION

The case of Starchiojd is one of many such testimonies to Transylvanian influence in Prahova County. Researching and presenting the results of these influences led me to the conclusion that the impact of the newcomers was much greater than I initially expected, with both documents and accompanying studies proving this fact. Perhaps, with deeper investigation, more evidence regarding Transylvanians will be discovered by carefully examining traditions and customs in the area[27].

All sources, whether published literary materials, articles or archival documents, or simple narratives, have contributed to (re)constructing the past, using the comparative method for analysis and the regressive method to reconstruct episodes of this puzzle from well-known moments. Sources managed to capture the evolution of these migrations, from a few rare episodic contacts to a sudden population increase in the area due to a much larger exodus, noting the arrival of several Transylvanians in the 1831–1836 interval. Most of those who arrived came from somewhere in Transylvania, for easily understandable reasons such as avoiding conscription, problems with authorities, and the discrimination manifested by Hungarian authorities, leading to a significant migration wave in the 19th century. The geographical elements positively influenced the escape of Transylvanians, as they could easily avoid customs outposts (advanced points of the customs) and the customs themselves by using paths whose knowledge was passed from one fugitive to another.

Regarding these paths, we can talk about their popularization through shepherds descending from the mountains; they, along with traders, were the main means of orally transmitting these clandestine access routes. The above statements only serve to prove that Starchiojd and its community were strongly influenced in their evolution by migrants from within the Carpathian arc, not only in material terms but also spiritually, with their presence being recorded in legends, documents, books, and studies based on research in the area. At the same time, we demonstrate that intra-regional research can reveal new episodes from the local history of the area, unrecorded or forgotten by the community, mainly using the comparative method.

After the research, I can say that Starchiojd, compared to another locality I studied, Podu Dâmboviței, preserves similarly clear traces, although they are quite visible; however, the Transylvanian past was a marginal theme for Starchiojd and its population. In the case of Podu Dâmboviței, intangible evidence such as names, words, gastronomic recipes, legends, and toponyms were better preserved, some being used today to provide uniqueness to the area, with history serving as a justification in the face of present realities. Also, speaking generally for the entire

[27] The mixed epistemic attitude, both historical and anthropological perspectives, at the time, facilitated the most rigorous and realistic presentation of the facts and individuals mentioned in the documents. It also allowed for an examination of the context in which the action takes place, analyzing the people, space, and activities carried out in this setting.

Argeș area, we can say that the Transylvanian element is much more noticeable. The former capital Târgoviște and the rights of foreign merchants in this capital are some of the factors with an effect on the much more durable persistence of Transylvanian elements. Additionally, the Rucăr-Bran corridor was traversed long before the use of the roads in the Teleajen Valley.

As mentioned in the previous study conducted in Argeș, events after 1948 seem to have largely separated people from their local past. Communization, through the process of forming the „**new man**," only proletarianized the population, which I observed during an interview with colleagues Eduard Pârvan and Cristian Mușa with the elderly Dumitru Cristea (born December 15, 1926) in the fall of 2021[28]. The interviewee emphasized the importance of work that shaped and later determined the course of his life, with a significant part of it engaged in work. Therefore, the past was occupied by work, mystifications of class struggle, national patriotism, and social revolutions, negatively influencing local history, causing people to distance themselves from the knowledge of their true origins. Tradition was replaced by socialist competition, a competition in which the past played an exaggerated role as a moral reference, offering prominent historical figures in the community a proletarian aura, which was supposed to mean a work model for people, but with an emphasis on quantity, supporting the departure from village life to an industrial one. All these being said, I could thus prove the presence and influence of Transylvanian elements on the history and mentality of Starchiojd and its surroundings, using everything available to me in terms of sources. The study remains open to other hypotheses, arguments, and – why not? – future research.

REFFERENCES

Brătescu, Paulina, Ion, Moruzi, C. Alessandrescu. 1897. *Dicționar geografic al județului Prahova* [publicat sub îngrijirea d-lui C. Alessandrescu], Târgoviște: Tipografia și legătoria de cărții Viitorul, Elie Angelescu.

Coman, Marian. 2013. *Putere și teritoriu. Țara Românească Medievală secolele XIV–XVI*, Iași: Polirom.

Cruceru, Alexandru-Ionuț. 2018. *Județul Săcuieni. Studiu de geografie istorică*, București: Editura Universității din București.

Dedu, Ion R. 2007. *Așezări prahovene. Repere istorice*, Ploiești: Mileniul III.

Fotino, Dionisie. 1859. *Istoria Generala a Daciei sau a Transilvaniei, Țerei Muntenesci și a Moldovei*, traducere de George Sion, v. III, București: Imprimeria Națională a lui Iosiv Romanov & Comp.

Giurescu, C. Constantin. 1934. "Vechimea satelor Star-Chiojd și Chiojdul din Bâsca in fostul județ al Săcuienilor", *Revista Istorică Română*, IX, p. 283–285.

Iorga, Nicolae. 1906. *Negoțul și meșteșugurile în trecutul românesc*, București: Institutul de arte grafice și editură Minerva.

Iorga Nicolae. 1911. "Din viața moșnenilor oieri ai ținutului Săcuienilor", în *Analele Academiei Române*, XXXIV, p. 65–69.

[28] See Ștefan-Eduard Pârvan, „Aspecte ale metodei biografiei sociale, cu ilustrări pe un caz particular", *Anuarul societății prahovene de antropologie generală in honorem Gheorghiță Geană (80)*, București: Eikon, 2022: 169–176.

Lamont, Michèle și Virág Molnár. 2002. „The Study of Boundaries in the Social Sciences", in *Annual Review of Sociology*, 28, p. 167–195.

Lattimore, Owen. 1962. *Studies in Frontier History: Collected papers 1928–1958*, London: Oxford University Press.

Pătroiu, Ion și D. Ciobotea. 2001. *Catagrafia obștească a Țării Românești de la 1831*, Craiova: Helios.

Rachieru, Mihai. 1996. *Istorie și comerț pe Văile Prahovei și Teleajănului: 1774–1848*, București: Sillex.

Simache, Nicolae. 1968. *Documente privitoare la istoria comunei Starchiojd*, Ploiești

Topolski, Jerzi. 1987. *Metodologia istoriei*, București: Editura Științifică și Enciclopedică.

Turner, Frederick Jackson. 1994. „The Significance of the Frontier" in *American History and Other Essays*, New York.

Zaharescu, Ecaterina. 1923. *Vechiul județ al Saacului in lumina istorică și antropogeografică* in "Buletinul Societății Regale Române de Geografie", XLI (1922), București, p. 149–173.

Archive Material

A.N.I.C. – Arhivele Naționale Istorice Centrale [*National Central Historical Archive*], Colecția Catagrafii, 1838, partea I, dosar 91, vol I, Plaiul Despre Buzău, Jud. Saac, p. 325, 542.

B.A.R. – Biblioteca Academiei Române [*Library of Romanian Academy*], fond A. 2825, *Condică de dări pentru 12 județe de dincoace de Olt și Condica de dări a județului Saac*, 1826.

Analele parlamentarea ale României, Tomul II, Imprimeria Statului, București, 1892: 485.

D.J.A.P. – Direcția Județeană a arhivelor Prahova [*Prahova County Archives Directorate*], fond Ocârmuirea județului Saac, dos. 82/1833.

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AT STRATOS' "CAULDRON". *TSÍPOURO* DISTILLATION AND QUALITATIVE MORAL ECONOMY IN ÉVZONOI, GREECE

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Anthropological studies of moral economy are grounded in a quantitative conception of economics. In the theoretical slipstream of scholars such as James C. Scott or Edward P. Thompson, an authority extracting goods and services from a subordinate entity behaves morally if what remains for the latter is quantitatively sufficient for survival and social integration. The ultimate objective pursued in this paper is a contextual and alternative re-visiting of the moral economy. The context is provided by the activity at one of the two workshops for distillation commonly known as "cauldrons"– that of Strátos – in Évzonoi, Kilkís prefecture, Greece. He distils each autumn *tsípouro*, the renowned Greek brandy from grapes. The anthropological backdrop of behaviours at the cauldron was rooted in the *trust* that the two parties involved in the economic relationship fulfil their respective duties; for Strátos, among others duties, that of distilling a product of the highest *quality*, primarily related to *safety* for consumption. The alternative revisiting of the moral economy involves a redefinition of the *safety-first* principle, as was implied by J. C. Scott: a shift from safety concerning the *quantity* of goods and services one needs for survival and social integration to one related to their *quality*.

Keywords: moral economy, quality/ quantity of goods, trust, *tsípouro*.

In a late afternoon of a day at the end of October 2022, Strátos [*Στράτος*] writes down some notes in a record on the small desk placed inside his personal workshop of *tsípouro* distillation, the "cauldron" – a name for both the cauldron itself and the entire installation and even the house that shelter the installation. On one of the two doors of the workshop, that door which is permanently open, Lázaros [*Λάζαρος*], a co-villager of Strátos from Évzonoi [*Εύζωνοι*], comes in. Sitting down on the worn couch, his elbows on the table in the front of the couch, he quickly presents his offer; a consistent and apparently irresistible offer: fifty barrels[2] of *μούστος* ("grape must") for distillation, meaning the "boiling" of at least fifteen cauldrons. But Strátos – meanwhile leaving the desk and sitting down on a nearby chair – does not seem excited at all and begins a tough bargaining, judging by his emotional reactions pairing his dialog with Lázaros. The latter had to tackle all the bureaucracy needed for permitting the distillation (implying also the time

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[2] Plastic barrels, having 50 or 80 litres capacity.

wasted travelling to Kilkís, the capital city of the prefecture with the same name, and Políkastro, a nearby town), to bring wood for fire, etc. Strátos was strictly going to take care of distillation against a remuneration of 15 euro for each cauldron. "If you like it, it is all right, if you do not like it, you may try elsewhere!" Having more controlled emotions – as if assuming an inferior position in negotiation – Lázaros says that he would assist only to the "boiling" of the first cauldron and then he would leave, being very busy. Repeats and again repeats, this being his first and last message in the bargaining that finished without an accord. Then, Lázaros gets out the door of the "cauldron"[3] as if following the Strátos's counsel, "to think better". I asked Strátos where the problem had been, the offer had seemed to me irrefutable. I had heard his answer in other situations too: *δεν θέλω να με περνάει για χαζός* ("I do not want to be considered silly")! Moreover, I was not grasping Lázaros' insistence; he had some more variants, but he seemed to rather at any price prefer Strátos. The truth – as, again, Strátos had exposed to me in other occasions too – was in his opinion only one: comparing with what happened at other "cauldrons", *έδω κάνουν ότι θέλουν* ("here they do what they want").

ÉVZONOI, A SMALL AGRICULTURAL SETTLEMENT AT THE BORDER WITH NORTH MACEDONIA

On the sign roads on the margin of the (high) roads surrounding Thessaloníki, beside of the names of more or less impressive destinations as Athens, Kavála or Édessa, can be seen also the name of the small village of Évzonoi (Ștefănucă, 2016b: 145), located *circa* 70 km to the north. His importance derives from his position: custom point at the border with North Macedonia. Administratively, in the wake of the administrative reorganization from 2011, the Évzonoi *community* [κοινότητα] belongs to Paionías [*Παιονίας*] *municipality* [δήμος], Kilkís [*Κιλκίς*] *prefecture* [νόμος]. The population – with a mixed origin, that is natives [ντόπιοι] or Pontic "refugees" [πρόσφυγες], the last ones coming and being installed here in the context of population changes between Greece and Turkey in 1923 – comprised, by the census in 2011, 311 residents ("Εύζωνοι Κιλκίς"). The permanent residents are much lesser, youth especially following the general-regional tendency to migrate to urban zones, above all Políkastro and Thessaloníki. Actually, the value from census characterizes rather the week-end periods, when a portion of those who had left come back in the village. A stroll on the small streets of the locality reveals to the viewer a lot of agricultural outfits, in use or being abandoned, a doubtless cue of the agricultural profile of the settlement. The meadow of Axiós [*Αξιός*], the river that pass at the west, but also the hills beyond the highroads passing at the east of the village are favourable for agricultural crops. Now it is to be observed a predilection for grain crops. In the memory of locals, the period with a maximum flourish of the village coincides with

[3] Wherever the term "cauldron" appears in inverted comas refers to the entire workshop.

the decades of tobacco cultivation in the second part of the last century. Then, as now, the locals have cared for small patches of grapevines, especially the *tsápourno* [*τσάπουρνο*] variety, in the category of "red" [ερυθρός] varieties, very aromatic and well adapted to the local conditions of soil and clime. A part of grape harvest, both from vineyards and yard canopies, is transformed in vine; the other, the big one, in *tsípouro* ["τσίπουρο", "brandy from grapes"], by distillation at one of the two "cauldrons" in Évzonoi or at one of the workshops in the neighbouring localities. For more than a decade, Strátos owns a "cauldron" and provides the service of distillation in Évzonoi.

METHODOLOGY AND OBJECTIVES

The present study was made using the instruments of social-cultural anthropology. Long-term fieldwork and participant observation represented the basic instruments in the frame of a *microscopic* approach (Geertz, 1973: 20–23) of a central theme: the *anthropological* background of relations between the provider of brandy of grapes distillation service, a brandy with a generic name, *tsípouro*, already mentioned, and the requesters of this service.[4] As a final objective, a short *contextual* and *alternative* revisiting of the moral economy. Some other revisiting of the same type are either still loyal to a "classical" ontology of the economy's concept (for example, Chris Hann [2018, 2021]; here, the author focuses on *work* as a *value* in rural Hungary, proposing "to discard the concept [of moral economy] altogether"[5] [Hann, 2018: 231]), or wholly drift away from this ontology (for example, Didier Fassin, who defines the moral economy as "the production, distribution, circulation, and use of moral sentiment, emotions and values, and norms and obligations in social space" [Fassin, 2009[6]]). Therefore, the study bears the mark of the *economic anthropology*. The microscopic approach of the theme meant the intensive research in a single locality, Évzonoi, and at a single "cauldron", that of Strátos'. But "microscopic" does not equate "isolated", the author having a good previous *extensive* familiarization (*cf.* Carrier, 2005: 3) with the general regional frame and broader cultural context. It may be said that exactly this familiarization made possible the microscopic approach; a familiarization that meant first of all using the language satisfactorily, language being without doubts "the most important asset that an ethnologist [anthropologist] has in the field" (Scupin, 1992: 9).

[4] "Hidden structures mold economic processes; these structures and cultures are not always apparent in surface behaviors" (Halperin, 1994: 4), and the conviction of anthropologists (economic or not) is that "[...] participant observation, involving long-term and in-depth acquaintance with a local context, will reveal an initially-hidden connections and tensions between various aspects of life and social organisation" (Coleman, 2005: 340).

[5] As an warning that must be distinguished, in the words of James Carrier (2018: 18), "between the moral values that are the context of economic activity and those that arise from the activity itself".

[6] Paragraph "Openings: Toward an Anthropology of Moral Economies".

The fieldwork stage has taken place between 22 and 27 October 2022. However, the exigencies of long-term fieldwork have been satisfied by the fact that this short period adds to a long range of comings and re-comings in the village, as a researcher or not. The onset was made by an uninterrupted period of two and a half months in the village considered (mainly, to the same "cauldron"), respectively of seven and a half months in the region, in the 2011–2012 interval.

The motivation of making the study did not initially have a relation with the mentioned theme. It is about an initiative born from the *frustration* not writing yet a scientific text that to have as a spatial landmark quite the place where I begin my fieldwork in another culture. All these against the background that researches in other Greek places had been finished with such texts (*for ex.* Ștefănucă 2016a; 2022; etc.). The anxiety not having a theme, all the more so a well built research question, was mitigated by the intention to epistemologically stake from the beginning on a *pattern* of *serendipity*,[7] being no other than "[...] fairly common experience of observing an *unanticipated, anomalous and strategic* datum which becomes the occasion for developing a new theory or for extending an existing theory" (Merton, 1948: 506). But, while social-cultural anthropologists "[...] generally are reluctant to think in terms of social laws and universals" (Carrier, 2005: 3), are very opened to "unanticipated", until the point to give up quite the theme with which they had come in the field (Okely, 2012: 48) and abandon themselves to the suggestion the field makes them. Therefore, the experience of previous fieldworks in Évzonoi, the "tradition" of serendipity in anthropology, were good reasons for a methodological projection focused on serendipity strategy. However, the first days of October 2022 fieldwork brought with them a thought of doubt regarding the chosen strategy. After all, consciously or not, it was a certain thematic pack that guided the research: ethnicity and inter-ethnicity relations; the border meaning and trans-border relations; the symbols and the social and cultural meanings of the drink distilled at "cauldron"; etc. That is why, to leave the theme to appear by itself it was maybe more than ever needed of a virtue which if the anthropologist does not appropriate it in *all* the phases of his enterprise could no (longer) be anthropologist: *patience* (Mihăilescu, 2007: 92–93).

The registration of fieldwork activity was made especially in the field diary, supported by a lot of photos and some audio and video recordings. The cabinet study was made in two directions: (1) that of theoretical texts of economic anthropology, and (2) that of materials – anthropological or not – having alcoholic drink as an object, of course focusing on those referring to *tsípouro*. It goes without saying that to the cabinet study associates also the analysis of newer

[7] The productive potential of serendipity in scientific knowledge raised my awareness on the occasion of Anthropological Colloquia *Francisc Rainer* [Convorbirile antropologice *Francisc Rainer*], the IV-th edition, 31 May 2019, organized by Marin Constantin ("Francisc I. Rainer" Institute of Anthropology of the Romanian Academy) at the County Museum of Natural Sciences Prahova, Ploiești, Romania, colloquia on the theme "Unanticipated ethnographical fact: on serendipity in anthropological research".

(corresponding to the last mentioned stage) or older (corresponding to some previous stages in Évzonoi and in the region and, implicitly, at Strátos' "cauldron") fieldwork material.

However, the approaching of the main theme, as well as of other secondary themes, forming the universe of cultural-economic relations which envelops it, must be preceded by what it may be named a short *ethnography* of *tsípouro.*

TSÍPOURO: SOME GENERAL AND LOCAL ETHNOGRAPHIC ASPECTS

Tsípouro (pl. *tsípoura*) is the most spread general designation in Greece for all ranges of brandy obtained by distilling fermented grapes. The regions with the most intense tradition in producing brandy of grapes are situated in the north half of the Greece, namely Macedonia [*Μακεδονία*], Thesally [*Θεσσαλία*] and Epirus [*Ήπειρος*] ("Βόρεια Ελλάδα..."). The hypothesis regarding the origin of this drink are different: by a source (*ibidem*), the *tsípouro* distillation would have been initiated by the monks from Mount Athos in the XIV-th century; by an other source (Ψωμάς *et al*, 2008: 19), Zísis Misoúras [*Ζήσης Μισούρας*] from Týrnavos [*Τύρναβος*] (today belonging to Lárisa prefecture) would have adapted in the 1850s the distillation technique – taken from Bulgarians who passed through Týrnavos – to the husk of grapes. He, too, would be the author of the resulted product name; etc. The distillation is done in two variants, both of them by adding (or not) some flavours to confer a special aroma to drink: (1) one time distillation [μονή απόσταξη], from fermented grapes including the wine, and (2) two time distillation [διπλή απόσταξη], from the husk remained after extracting the must. In both cases, the obtained drink must have an alcoholic strength of maximum 45º. The exceeding of this value can be adjusted by a special technique of mixing with water (*field information*). Further, mixing the brandy obtained from the third distillation with water results in *oúzo* [*ούζο*] (Ψωμάς *et al*, 2008: 19), although the alcohol now used for distilling *oúzo* – meanwhile becoming a kind of national Hellenic drink – does not necessarily stem from grapes (*ibidem*: 34–36). Irrespective of the technology used for distillation, traditional or modern, the process is the same: the grapes boil in a cauldron at a temperature which permits a controlled emission of vapours containing ethanol; the vapours pass through a pipe in a cauldron that refrigerates; there, condense inside the pipe; the liquid obtained is collected in a vessel placed under the end of the pipe.

At "cauldrons" from Évzonoi, and also from surrounding villages where such workshops are to be found – Pondoirácleia [*Ποντοηράκλεια*], Plaiá [*Πλαγιά*], Fanós [*Φανός*] –, the used technology is the traditional one. Thus, the Strátos' distilling installation consists in a copper alembic with a capacity of 150 litres, placed above a fire wood stove, a copper pipe which springs from the onion-shaped cover of the alembic and pass to an other type of cauldron (copper also) full of cold water, and there falls down in serpentines.

Although the sunny hills on the right and the left of the Axiós river meadow are favourable to cultivate grapevines, the *tsápourno* variety finding here the best

conditions of clime and soil, the region is not a wine-growing zone. Vineyards are small. Nonetheless, the wine and brandy from grapes harvested in these vineyards are very appreciated in the region, especially those produced at Fanós. The distillation of fermented grapes – always in "one time" [μονή απόσταξη] variant – is done by every producer at one of the "cauldrons" in the region, with state authorisation, excepting the case of existing cauldrons strictly used in the household. Both from observation at Strátos' "cauldron" and at taverns in the villages, it is preferred *grápa* [*γκράπα*[8]], the brandy obtained by "one time" distillation technique, without adding flavours. The only other type of brandy from grapes in the region is literally named quite *tsípouro*, and is obtained by adding anise [γλυκάνισος] in the raw material for distillation.

The authorised period for distillation is no longer than two months and a half, from October to December. Activity at "cauldrons" in this period has a special social-community resonance. Under no circumstances the distillation workshops are places where the only relations that could be observed are those between the provider of the service of distillation and the clients, respectively in the moments of getting the raw material for distillation and delivering the final product. On the contrary, the "cauldrons" becomes the equivalent of the coffee house, both as a community social knot and public place of consuming alcoholic drink (*cf.* "Social and cultural...", 1998: 25–29). The basic social unity, around which all the other social contacts are weaved, is the one formed by the client who wait at the "cauldron" the entire period of "boiling" of his grapes and *καζανάς* ("the cauldron man"). The distillation workshop is a place of a continuous going back and forth. Usually, the person who "boils" [βράζει] grapes invites his relatives and friends for a common meal (with contributions more or less common), where meat and grilled meat dishes do not lack. The common meal is often just a stage of a true party, with fiddlers and dance quite in the front of distilling installation. Often, the unwritten law of hospitality compels the cauldron man to offer *tsípouro* and starters (salads, eggs, cheese, etc.) to anyone who happens to come to the "cauldron" (*cf.* "Βόρεια Ελλάδα:...", 2015). Strátos seems to have a good reputation in this sense. In the same time, the Strátos' "cauldron" is a place for men socialization, replicating a gender stratification observed and described for public places of drink consuming, both in Greece (Gefou-Madianou, 1992) and in other parts of the world (*for ex.* Gibson and Weinberg, 1980). Thus, the women come at the "cauldron" only accompanying her husbands, or, in any case, in the company of a man, and never on their own initiative. The community echo of the activity at "cauldron" is so strong that in many parts of Greece the local authorities organize festivals of *tsípouro* ("Ολοκληρώθηκε η γιορτή... Φλώρινας", 2016; "Γιορτή τσίπουρου... Σουφλί", 2022; "Πλήθος κόσμου... Δομνίστα Ευρυτανίας", 2022; etc.). These take place quite exactly at the "cauldrons"; but if the participants are too numerous for

[8] Ψωμάς *et al* (2008: 18) writes that *γκράπα* is the equivalent Italian drink to Hellenic *τσίπουρο*. Just one time I have ever heard in Évzoni or in neighbouring zone an opinion about the origin of the term *γκράπα* ("*Γκράπα* is not a Greek word, it is a Latin one", Dimítris [*Δημήτρης*] from Políkastro).

the event to take place inside the distillation workshop, being too small no matter how big it is, a different place is chosen, but where a distilling installation is also brought, which continues to "boil" throughout the festival period.

TRUST vs. *RECIPROCITY* AT STRÁTOS' "CAULDRON"

In a milestone monograph for social anthropology, *The Nuer*, Edward Evan Evans-Pritchard, describing the cultural significance of cow to a "Nilotic people", notes (pg. 19) that irrespective of the topic proposed to Nuers for discussion, this turned to cows. Indubitably, the cow was the core of a *cultural theme* (Opler, 1945: 198). Not being a proper cultural theme (but perhaps sending to one), *the intrinsic properties of the drink distilled in the cauldron* was the direction where turned the discussions at Strátos' "cauldron";[9] even "to despair[ring]" of the anthropologist (Evans-Pritchard, 1940: 19), continuously trying with no success to stimulate conversations on an entirely different topic. In the same time, it was to be noticed a *distrust* regarding the drink distilled strictly for commercialization:

> "Let me give you an example. Someone, if he is a merchant, if you go to a 'cauldron' where they 'boil' strictly for selling, he counterfeits it. He wants to produce more litres [per distilled cauldron], and he does not care about if you got to the hospital [...] He cares only about money. Instead of ten litres of *tsípouro* he will make fifteen. He will tell you: «I earned five litres more. With five litres I earned fifty euro». He watches to take that 'fifty' but you, who want to drink, it is possible to go to the hospital" (Hrístos [*Χρήστος*] from Pondoirácleia, *συνεργάτης* ("associate", "comrade", "friend") of Strátos, helping him with the work at the "cauldron", especially when the last one is gone with all kind of businesses at Políkastro and Kilkís).

[By Hrístos, the penchant for cheating actually is a human universal: "Forgery and cheating are to be found in all states, do not think that is present in Greece only. The entire world functions by this model".] The conviction just exposed has two consequences: (1) the *tsípouro* consumer tries to become also a producer of the drink, all the more that the product is to be *necessarily* integrated in an *householding* economy (Polanyi, 2001 [1944]: 55): consuming and sharing the drink with the members of one's family, relatives, friends and very rarely its selling outside the "household",[10] and (2) trying to find a *καζανάς*, a provider of *tsípouro* distillation service in which the requester of this service to have the full confidence that he will distil a product of the purest quality. The *καζανάς* once discovered, the relationship between the two parts tends to become permanent. There is no necessity – the

[9] "They talk too little about the social significance of *tsípouro*; they talk more about the intrinsic qualities of the drink, the manner in which it have to be drunk, the therapeutic properties or, on the contrary, about the consumption that damages" (*a note from fieldwork diary*, Tuesday, 25 October 2022).

[10] It is about a consumption behaviour conditioned by a powerful cultural norm by which the *tsípouro* has never to be drunk alone.

attitude just exposed being without doubts a cause, but not the only one (alongside, for example, the price for distillation) – that the two parts to dwell in the same locality; the observation at workshop in Évzonoi revealed that the persons who were distilling there were rather residing in a different locality. Strátos, again, has a good reputation in this sense. The good reputation is connected not only to his abilities as a *μάστορας* ("master", "technician") and his endeavours to distil the product desired by the client, but also to other traits, with positive relation to the *fairness* of the relationship in general between the two parts. Being a Christian Orthodox devotee with a deep faith in God – indicated, among others, by the numerous religious icons exhibited in the workshop – is an additional reference.

> [*a note from fieldwork diary*, Thursday, 27 October 2022: "When leaving, I asked them if they were pleased. *Καλή παραγογή!* ('Good production!'), was the answer of the second Iánnis. They came here to distil *tsípouro* for ten years and would also come here the next year; especially since Strátos is a man with faith in God and he would look for concealing not even as – using an expression to be met in my mother language Romanian – 'a little black under the nail' (showing me in the same time with an index the tip of the other index to suggest the quantity)".]

But Strátos is given credit also as a *tsípouro* producer himself. Just a proof chosen among many fieldwork proofs... Inside a *paréa* [*παρέα*, "a group of friends"], that in the middle day hours gathers at a tavern in the elegant *plateía* [*πλατεία*, "central square"] of Évzonoi, socializing around a *mezés* [*μεζές*, "snack", accompanied by the consumption of small quantities of *tsípouro*], it was to be heard the next remark: "If you drink [*tsípouro* / *grápa*] and you are not well, the drink is not from [fabricated by] Strátos".

*

This was the meaning of Lázaros behaviour in his "bargaining" with Strátos in the episode related in the study introduction.[11] That is, the generous offer for distillation is doublet by an absolutely *trust* in *καζανάς*. The consequence is that it is no longer the case that the last one to work under the supervising of his client.[12] Strátos is given the comfort to be lacked by the psychological tension pairing this supervising. In the same time, the peace to be relieved by all the social "rituals" – in a more or less metaphoric sense – associated to the presence of the client at "cauldron". In Strátos' words, to remove some *πέτρες* ("rocks") staying "on his head".

However, the negotiation between the two characters is not in the logic of market economy (although the macroeconomic "instituted process" [Polanyi, 1957]

[11] It is easy to understand in this stage of the study that Lázaros was not one of the permanent Strátos' clients.

[12] I previously mentioned that, usually, the requester of distillation service stays at the "cauldron" the entire period of processing of his own material. The behaviour, of course, represents (also) a caution that the things proceed in the direction desired by him.

in the frame of which happens this action is that of market economy). It is not about "rational" conduct, every part intending a maximum of benefit. Moreover, even having ethic overtones, at least one of the parts taking care to expose, or to allude, to the other part the (truly) real advantages resulting from a certain proposal. It is about a negotiation in the logic of *reciprocity* – therefore, no longer being the case of negotiation in the most proper sense – where the exchange between the two parts is governed by a principle of *equivalence* (so not by a maximum personal benefit one). The general cultural context is entirely favourable to reciprocity, a context emanating from and in its turn stimulating the constitution of a society in which its members "feel" very "close" to each other. And if K. Polanyi (*ibidem*: 253) is right, "The closer the members of the encompassing community feel drawn to one another, the more general will be the tendency among them to develop reciprocative attitudes [...]". The closeness, and of course reciprocity, can be noticed in a lot of comportments in Hellenic society. For example, it is to be remembered the all over spread and frequent custom of *kérasma* [from *κερνάω*, "to treat someone"], where, carefully analysing, it is ritual transacted quite the *trust* (Ștefănucă, 2014). Or, by a saying heard in Kavála, *μόνος ούτε στο παράδεισο*! ("alone, not even in paradise!"). Always, *όλοι μαζί* ("all together").

However, Strátos bargains. He bargains not because he suddenly conceives himself in an *impersonal* relation of exchange, governed by the market economy mechanism. He appeals to this transformations to eliminate from the beginning any possibility that Lázaros to break the rule of reciprocity.[13] That is, to consider him "silly", that is Lázaros being interested only by his personal advantage behind the mask of reciprocity. This was the meaning of Strátos' explanation, as being preferred to other cauldron men because "here they do what they want". Apparently, it is to be understood that persons who come to distil have behaviourally a bigger freedom than at other "cauldrons", including also the organization – planned or ad-hoc, stimulated by the consumption of *tsípouro* – of a real party (in other conditions, Strátos himself enjoys such parties). In depth, however, the explanation is related to the perception that in the company of Strátos reciprocity might be more easily eluded (although there is no necessity to happen). In other words, to talk about a character more... *χαζός* ("silly")!

From "working" with Strátos for more than a decade, the conclusion would be that of him possessing a suspicious personality. But he is not to be placed in a category of so-called "difficult personalities" (Lelord et André, 1996). On the contrary, he represents a source of delight in any place he makes his appearance. Moreover, the suspicion is one of the traits of the ethnological population category to which he belongs, the Greec Pontic one. Be that as it may, quite this attitude was

[13] By the concepts used by Marshall Sahlins (1972: 191–196), to eliminate the possibility that *balanced reciprocity* to become a *negative reciprocity* (the last one taken from Alvin W. Gouldner, „The Norm of Reciprocity: A Preliminary Statement", 1960), in which "[T]he participants confront each other as opposed interests, each looking to maximize utility at the other's expense" (*ibidem*: 195).

responsible for disclosing to the researcher some economic-cultural "structures" (see footnote 3) that in the first instance are not noticeable.

THE MORAL ECONOMY REVISITED

The observations from the previous paragraph are compatible with a *substantivist* anthropological conception on economy, initiated by Karl Polanyi at the middle of the last century. The comportments at "cauldron" confirm the conclusion that "[T]he human economy [...] is embedded and enmeshed in institutions, economic and noneconomic" (Polanyi, 1957: 250). On the background of the macroeconomic "instituted process" of market economy take place economic behaviours infused by different norms, *moral* in the end; a confirmation this time of a conclusion of Raymond Firth (1951: 114) that "[F]ar more than we ordinarily suppose economic relations rest on moral foundations". Attitudes, and behaviours, taken for granted in the frame of the *formal* conception of economy (a conception that, by the same K. Polanyi and his disciples is strictly valid – but not *entirely* valid – for market economy) are those compatible with a desideratum of a *rationality* supporting an as high as personal *advantage*. But the moral norms, penetrating the economic relation, also including here that relation specific to the market economy, lead to a taming of some social-centrifugal tendencies, which ignore the self-evident fact of "man's dependence for his living upon *nature* and his *fellows*" (Polanyi, 1957: 243, *my italics, S.Ș.*). It is to be noticed an *inevitable cultural* embedding of the economy, that attracted attention from many authors (Blim, 2005; Halperin, 1994; Hopkins, 1957; etc.). Maybe for this reason the research initiatives at Max Planck Institute for Social Anthropology – specialized in economic anthropology studies – from Halle / Saale, Germany, have also a *militant* character regarding the (re)embedding of economy in society (*for ex.* Hann and Yalçın-Heckmann, 2020: 73–92). Irrespective of the "(re)embedding" meaning[14], it is surely related with a (re)acquiring of consciousness that in the economic process we depend on each other. All the more, the economy would serve to a function of *social integration*. The risk that always accompanies the fostering of a strictly formal economic paradigm is – in the letter of the ideas circulating in the mentioned institute – a vectorial reversal: not economy serving to societies' needs, but the society serving to economy's needs. Hardly to imagine a good social integration in such conditions! At the most, a formal and extrinsic, by no means a natural and intrinsic, one.

However, this is not the sense of the intention of revisiting moral economy but rather the maximum extension anthropological background of this revisiting. The sense is related with the classical study *The Moral Economy of the Peasant* (1976) by James C. Scott. The study places in the foreground an economic conception at the peasantry from South-East Asia supported by a subsistence ethic. This conception is in its turn an expression of a principle which both James

[14] As cultural embedding or as an embedding resulting from the social organization itself, with economic roles performed by institutions noneconomic in their essence (*cf.* Hopkins, 1957: 298).

C. Scott and James Roumasset and José Encarnación Jr. before him called *safety first*. Thus, in the context of a precarious existence the peasants of J.C. Scott are interested not by productions that to maximize their benefit, but by crops that guarantee to them a minimum level of subsistence. Instead of the high productive but risky varieties of rice, they prefer varieties much less productive but well adapted to local climate conditions. All the peasant "social arrangements" (for example, the models of reciprocity) are compatible with the principle *safety first*. In his relation with co-villagers, local landlords and state, "[T]he peasant's criterion will be what is left after outside claims have been met [...] rather than the levels of the claims per se"[15] (Scott, 1976: 29). The enumerated instances have a moral behaviour only if "what is left" is sufficient for a minimal subsistence and the accomplishment of social duties by the peasant family.

The psychological incentive of subsistence ethic is the so-called *fear of dearth* (*ibidem*: vii; *cf.* Thompson, 1971). Interestingly enough, in the English language *dearth* is a paronym of *death*. The rapport between the two terms is not simply paronymic, the fear of dearth being one of the logical species – maybe the most familiar – of the fear of death. Taking into account this observation, there is no mistake if one considers that *fear of death is the ultimate psychological incentive of any moral economy*. Coming back to the "peasants" form Évzonoi and adjacent region – representatives of a different type of social stratification, based on classes, specific to modern occidental societies, so that by income, education and preoccupations fit to middle class –, they benefit by a prosperity thanks to which the fear of dearth might not longer be taken into account as a psychological background of a moral economy. However – as the reader already understands linking up with the previous paragraph – the principle *safety first* is as present as in the case of South-East Asia peasants studied by J.C. Scott. But it happens a moving of emphasize from *quantitative* to *qualitative*. It is to be noticed that, from this point of view, irrespective of their orientation the moral economy studies are generally still tributary to a *quantitative* ontology of the economy (*cf.*: Edelman, 2012; Götz, 2015; etc.), meaning the re-entering each time of the formal paradigm on the back door. It is as if the last word pertains to the quantities of goods and services a consumer has at his disposal. A *qualitative* economy would consider *explicitly* not just the quantity of the goods and services, but also their quality. The managing of fear of death is in the same measure related to the quality of the consumed products. The aggressive potential of some of them for life and health is very high, requiring an increased prudence in their consumption. Among these, the brandy distilled from grapes. Therefore, it is natural the appearance of some economic relations on moral basis that to place *trust* in their core, a trust that the fabrication of a good is paralleled by all the measures to make it safe for consumption. So *safety first*! It is also natural the constitution of some "social arrangements" of spreading / reducing the *risk*: if for South-East Asian peasants the risk is related to starving, for the members of Greek communities and in situation

[15] "The test for the peasant is more likely to be 'What is left?' than 'How much is taken?'" (Scott, 1976: 7).

taken into account, to the consumption of a toxic *tsípouro*. The state, by regulations regarding production[16], bottling and commercialization of brandy from grapes, is not credited as a reliable partner in this sense. The impersonal(ized) economic relations, of maximum social distance (in the logic – again – of market economy) are perceived as a total exposure to risk. Instead, a "social arrangement" approximating the "patron-client" scheme is much more efficient for reducing the risk. The "clients" of the "patron" Strátos tend to be the same year by year. However, the statuses might reverse; in a different context, Strátos is the one who becomes "client" in his need to settle a certain problem. In the end, it is about a [economic] relationship which generates and is supported by o series of "mutual obligations" (Carrier, 2018: 18). We may say about Strátos that as "[I]n Kula trade [...] each individual has its partner on an other isle, thus personalizing to a remarkable extent the relationship of reciprocity" (Polanyi, 2001 [1944]: 51, *my italics, S.Ș.*), he too has partners in other villages (localities);[17] therefore, the appearance of some social-anthropological patterns of *symmetry* (*ibidem*) is to be noticed, inside which the risk is best managed.

INSTEAD OF CONCLUSION: *TSÍPOURO,* A SOURCE OF ANTRHOPO-REFLECTION

In an often cited paper, „Alcohol and Culture" (1965), David G. Mandelbaum notices practically the spatial and temporal omnipresence of alcoholic drinks. Among all the substances ingested by man in order to obtain certain bodily sensations, "alcohol is culturally the most important by far". That is why "it is useful to ask what the form and meanings of drink in a particular group tells about their entire culture and society" (Mandelbaum, 1965: 281). The anthropo-reflection form the present study was stimulated by behaviours and dialogues noticed and talked not so much in the moments of consuming, as of distillation of *tsípouro.* We succeed by way of them the access to cultural zones, to "structures" (see footnote 3) that in the first instance are not noticeable. Thus, we discovered as better matching to the "empirical" economy (Polanyi, 1957: 244) from a Greek region having the Strátos' "cauldron" in its centre not the formal concept, associated to the macroeconomic "instituted process", but a "compound concept" (Hopkins, 1957: 272), where the *formal* is inevitably paired by the *substantive*. The brandy distilled from grapes was also a guide by itself to a moral acceptance of economy based not just on the quantity, but also on the quality of goods and services accessed / offered to consumption;

[16] There are, for example, regulations regarding chemical composition of brandy from grapes (Ψωμάς *et al.*, 2008: 48).

[17] The state itself is *noles-volens* attracted in such a scheme. The imposing of a fixed tax on each distillation day is, in the J.C. Scott's moral economy paradigm, "the worst situation" (Scott, 1976: 52). However, the situation is tamed by the freedom given to *καζανάς* to work also out of the hours for which he has authorization. The potential inspections at "cauldron" by Economy Minister are informal announced by the "partners" officials from nearby customs Office, where the authorization for distilling was issued.

a guide in the *field*, validating once again that "the field research is the source of the genuine findings in anthropology" (Geană, 2020). Finally – as a possible direction to continue the research – it is to foresee the reflection on the degree in which the alcoholic drink distilled in the copper alembic is not just guide, but is capable quite to orient by a specific manner the attitudes, comportments, social relations generated around its distillation.[18]

Because *tsípouro* is a good with a *special status*. It is enough to mention that it never misses from the midday gatherings of males at taverns in Évzonoi and in the region. Although it is just an ingredient that accompanies the consumption of *mezés*, it is used metonymic, the invitation for such gatherings being an invitation "at *tsípouro*". It bears, therefore, a powerful social signification; it confirms the cross-cultural norm of sociability in consuming alcoholic drinks ("Social and cultural...", 1998: 17). Moreover, it sets itself up as a symbol of sociability. From this perspective, is to be ranked in the same line with *pálinka* in Tázlár, Hungary (Hann, 2017)[19], *betel* in Indonesia (Howel, 1997: 164), or coffee on a vast area. In addition, *tsípouro* is equivalent to *food*, the reflections of Marshal Sahlins from *Stone Age Economics* (1972) on "Reciprocity and food" (pp. 215–219) in primitive societies being perfectly valid for Évzonoi, its region and the entire Greek area. The food has "too much social value" (Sahlins, 1972: 218) to constitute the object of an exchange relation with ordinary goods. It is a part in the hospitality recipe and is given as *gift* to relatives and friends. "Traffic in food is traffic between foreign interests" (*ibidem*: 216). Moreover, *tsípouro* exceeds the food as a gift:

> "No matter where you go, if you bring a little bottle to a friend to drink it [...] he will always remember this gift [...] You say to him: 'I brought you a present, *tsipouráki*[20], to drink a little glass every day after you have lunch'. He will be pleased. Everything else you will bring to him, he will forget the present" (Hrístos from Pondoirácleia).

Finally, but without exhausting the reasons for which the brandy from fermented grapes is a good with a special status capable of specifically orient the human action in the moments of its production, consumption and distribution, *tsípouro* is a relevant indicator of peace and individual wellness:

> *A note from fieldwork diary*: [Monday, 24 October 2022] "Hrístos from Políkastro: '[With all the difficulties] we are well; as long as we make our *grápas*, we are well!'" [Wednesday, 26 October 2022] "In the context of a greeting at the gate of the 'cauldron': 'As long as you drink *grápa*, you are well'".

[18] In other words, the reflection on the "agency of [the] object" (*cf.* Hoskins, 2006: 74–77) *tsípouro.*

[19] Chris Hann conceives his study taking all the time into account also the "darker side, notably alcoholism and the destructive effects of male drinking within the domestic group" (Hann, 2017: 136). It is not to be noticed this "darker side" in the region flied over in the present study.

[20] "*Tsípouro*"'s diminutive.

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REFERENCES

Blim, Michael. 2005. "Culture and Economy", in James G. Carrier (ed.), *A Handbook of Economic Anthropology*, Cheltenham (UK) / Northampton (MA, USA): Edward Elgar, pp. 306–322.

Carrier, James G. 2005. "Introduction", in James G. Carrier (ed.), *A Handbook of Economic Anthropology*, Cheltenham (UK) / Northampton (MA, USA): Edward Elgar, pp. 1–9.

Carrier, James G. 2018. "Moral economy: What's in a name", in *Anthropological Theory*, vol. 18, nr. 1, pp. 18–35.

Coleman, Simon. 2005. "Economy and Religion", in James G. Carrier (ed.), *A Handbook of Economic Anthropology*, Cheltenham (UK) / Northampton (MA, USA): Edward Elgar, pp. 339–352.

Edelman, Marc. 2012. "E.P. Thompson and Moral Economies", in Didier Fassin (ed.), *A Companion to Moral Anthropology*, The Atrium, Southern Gate, Chichester, West Sussex: John Wiley & Sons, Inc., pp. 49–66.

Evans-Pritchard, E. E. 1940. *The Nuer. A Description of the Modes of Livelihood and Political Institutions of a Nilotic People*, Oxford: Clarendon Press.

Fassin, Didier. 2009. Les économies morales revisitées", in *Annales. Histoire, Sciences Sociales*, vol. 24, nr. 9, pp. 1237–1266 (English version available in the internet at https://www.cairn-int.info/journal-annales-2009-6-page-1237.htm, *last accessed on 24 March 2023*).

Firth, Raymond. 1951. *Elements of Social Organization*, London: Watts.

Geană, Gheorghiță. 2020. "Cercetarea de teren – sursa autenticelor descoperiri în antropologie" [The field research – the source of the genuine findings in anthropology], communication at Colloquia of Prahova County Society for General Anthropology, the IVth edition, 27–31 July 2020, Cheia, Prahova, Romania.

Geertz, Clifford. 1973. *The Interpretation of Culture*, New York: Basic Books, Inc.

Gefou-Madianou, Dimitra. 1992. "Exclusion and unity, retsina and sweet wine. Commensality and gender in a Greek agrotown", in Dimitra Gefou-Madianou (ed.), *Alcohol, Gender and Culture*, London: Routledge, pp. 108–136.

Gibson, James A. and Daniela Weinberg. 1980. "In vino communitas: wine and identity in a Swiss alpine village", in *Anthropological Quarterly*, vol. 53, no. 2 (Apr.), pp. 111–121.

Götz, Norbert. 2015. "'Moral economy': its conceptual history and analytical prospects", in *Journal of Global Ethics*, vol. 11, nr. 2, pp. 147–162.

Halperin, Rhoda R. 1994. *Cultural Economies. Past and Present*, Austin: University of Texas Press.

Hann, Chris. 2017. "The Human Economy of *Pálinka* in Hungary. A Case Study in *Longue Durée* Lubrication", in David Henig and Nicolette Makovicki (eds.), *Economies of Favour after Socialism*, Oxford: Oxford University Press.

Hann, Chris. 2018. "Moral(ity) and Economy. Work, Workfare, and Fairness in Provincial Hungary", in *European Journal of Sociology*, vol. 59, nr. 2, pp. 225–254.

Hann, Chris and Lale Yalçın-Heckmann. 2020. "Realising Eurasia: Civilization and Moral Economy in the 21st Century. 5+Years of REALEURASIA", in Chris Hann (ed.), *Max Planck Institute for Social Anthropology. Report 2017–2019*, Halle / Saale, pp. 73–92.

Hann, Chris. 2021. "Populism and Moral Economy", in Lene Pedersen and Lisa Cliggett (eds.), *The Sage Handbook of Cultural Anthropology*, Los Angeles / London / New Delhi / Singapore / Washington DC, Melbourne: Sage Reference, pp. 612–618.

Hopkins, Terence K. 1957. "Sociology and the Substantive View of the Economy", in Karl Polanyi, Conrad M. Arensberg and Harry W. Pearson, *Trade and Market in the Early Empires. Economies in History and Theory*, Glencoe (Illinois): The Free Press / The Falcon's Wing Press, pp. 271–306.

Hoskins, Janet. 2006. "Agency, Biography and Objects", in Christopher Tilley, Webb Keane, Susanne Küchler, Michael Rowlands and Patricia Spyer, *Handbook of Material Culture*, London / Thousand Oaks / New Delhi: Sage Publications, pp. 74–84.

Howell, Signe. 1998. "'May Blesing Come, May Mischief Go!' Living Kinds as Agents of Transitions and Transformation in an Eastern Indonesian Setting", in Laura Rival (ed.), *The Social Life of Trees*, Oxford: Berg, pp. 159–176.

Lelord, François et Christophe André. 1996. *Comment gérer les personnalités difficiles*, Paris: Odile Jacob.

Mandelbaum, David G. 1965. "Alcohol and Culture", in *Current Anthropology*, vol. 6, no. 3, June, pp. 281–293.

Merton, Robert. 1948. "The Bearing of Empirical Research upon the Development of Social Theory", in *American Sociological Review*, October, vol. 13, no. 5, pp. 505–515.

Mihăilescu, Vintilă. 2007. *Antropologie. Cinci introduceri* [Anthropology. Five Introductions], Iaşi: Polirom.

Okely, Judith. 2021. *Anthropological Practice Fieldwork and the Ethnographic Method*, London and New York: Bloomsbury.

Opler, Morris E. 1945. "Themes as Dynamic Forces in Culture", in *American Journal of Sociology*, vol. 51, no. 3, pp. 198–206.

Polanyi, Karl. 1957. "The Economy as Instituted Process", in Karl Polanyi, Conrad M. Arensberg and Harry W. Pearson, *Trade and Market in the Early Empires. Economies in History and Theory*, Glencoe (Illinois): The Free Press / The Falcon's Wing Press, pp. 243–270.

Polanyi, Karl, 2001 [1944]. *The Great Transformation. The Political and Economic Origins of Our Time*, "Foreword" by Joseph E. Stiglitz, "Introduction" by Fred Block, Boston: Beacon Press.

Sahlins, Marshall. 1972. *Stone Age Economics*, Chicago / New York: Aldine•Atherton, Inc.

Scott, James C. 1976. *The Moral Economy of the Peasants. Rebellion and Subsistence in Southeast Asia*, New Haven / London: Yale University Press.

Scupin, Raymond. 1992. *Cultural Anthropology. A Global Perspective*, Englewood Cliffs / New Jersey: Prentice Hall.

Ștefănucă, Sebastian. 2012. "Nativul şi cercetătorul; problema co-participării ştiinţifice (partea a II-a: O perspectivă locală asupra schimbării etno-sociale la Poiana Sibiului)" [The native and the researcher; the problem of scientific co-participation (part II: A local perspective on ethno-social change at Poiana Sibiului], in *Studii şi comunicări de etnologie*, tomul XXVI, Sibiu: Editura Astra Museum, pp. 112–131.

Ștefănucă, Sebastian. 2014. "*Kerasma*. One way of moral confirmation in Greece", in *Revue des Études Sud-Est Européennes*, Bucarest, tome LII, No. 1–4 Janvier-Décembre, pp. 243–255.

Ștefănucă, Sebastian. 2016a. "National and ethnic in the dialectics of identity in Skra, Greece", in *Annuaire Roumain d'Anthropologie*, tome 53, Bucarest: Editura Academiei Române, pp. 48–62.

Ștefănucă, Sebastian. 2016b. *Pe drumul către o antropologie balcanică. Repere de antropologie socio-culturală in nordul Greciei* [On the way to a Balkan anthropology. Social-cultural anthropological landmarks in the north of Greece], București: Eikon.

Ștefănucă, Sebastian. 2022. "Nowadays Identities and Place of Origin in the Balkans. The Arvanites Case in Tyheró, Greece", in *Annuaire Roumain d'Anthropologie*, tome 59, Bucarest: Editura Academiei Române, pp. 71–86.

Thompson, E.P. 1971. "The moral economy of the English crowd in the eighteenth century", în *Past & Present*, vol. 50, nr. 1, pp. 76–136.

*** "Social and Cultural Aspects of Drinking. A report to the European Commission" Oxford: The Social Issues Research Centre.

Greek literature:

Ψωμάς, Αντώνιος, Αστέριος Παπράς, Αναστασία Παναγιώτου and Σέρκο Χαρουτουνιάν. 2008. *Ιστορικές, λαογραφικές και χημικές παράμετροι για την ανάδειξη των ιδιαιροτήτων του αποστάγματος στέμφυλων σταφύλης της περιοχής Τυρνάβου* [Historical, ethnographical and chemical parameters related to the specific of grapes without must distillation in the region of Týrnavos], 2008, Αθήνα.

*** "Βόρεια Ελλάδα: Το... άγιο τσιπουράκι. Η «ιεροτελεστία» των καζανιών (ΦΩΤΟ)" [Northern Greece: Saint... *tsipouráki*. The «ritual» of cauldrons (Photo)] 2015 (https://www.902.gr/eidisi/koinonia/77693/voreia-ellada-agio-tsipoyraki-i-ierotelestia-ton-kazanion-foto, *last accesed on 26 February 2023*).

*** "Γιορτή τσίπουρου ετοιμάζεται στο Σουφλί" [The organization of *tsípouro* festival is in progress at Suflí]. 2022 (https://www.evros24.gr/giorti-tsipoyroy-etoimazetai-sto-soy/, *last accessed on 26 February 2023*).

*** "Εύζωνοι Κιλκίς" [Évzonoi, Kilkís], in *Βικιπαίδεια* (https://el.wikipedia.org/wiki/Εύζωνοι_Κιλκίς, *last accessed on 8 February 2023*).

*** "Ολοκληρώθηκε η γιορτή τσίπουρου στα καζάνια του δήμου Φλώρινας". [It has finished the festival of *tsípouro* at the cauldrons of Flórina municipality] 2016 (https://neaflorina.gr/2016/12/oloklirothike-giorti-tsipourou-kazania-tou-dimou-florinas-video/, *last accessed on 26 February 2023*).

*** "Πλήθος κόσμου στο 3ήμερο των εκδηλώσεων της 17ης γιορτής τσίπουρου στην Δομνίστα Ευρυτανίας" [A lot of people at the three days of manifestations of the seventeenth festival of *tsípouro* in Domnísta, Evritanía]. 2022 (https://www.domnista.gr/plithos-kosmoy-sto-3imero-ton-ekdiloseon-tis-17-is-giortis-tsipoyroy-stin-domnista-eyrytanias/, *last accessed on 23 February 2023*).

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LES AMBIANCES AU SEIN DES INFRASTRUCTURES TOURISTIQUES DE LA VILLE COLONIALE DE BISKRA (EST ALGERIEN)

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Conquered by the French army in 1844, Biskra was widely known as a notorious winter tourist destination during the colonial era. Characterized by a hot and dry climate, the 'queen of the oases' in the Ziban region was renowned for its numerous tourist facilities constructed using techniques imported from elsewhere, local materials, and apparent local stylistic influences. This distinguished architecture was notably mentioned in travel accounts and highlighted in tourist guides. Situated in the realm of heritage and architecture, this research aims to go beyond the knowledge of the built (material) heritage of hotels and thermal resorts in a southern Algerian city. Therefore, this article identifies and defines the atmospheres (intangible heritage) and architectural components, along with their origins, within the tourist facilities built in Biskra during the colonial period. Content analysis is the research technique applied to a corpus of textual sources dating from the colonial period itself. Thus, this work is conducted in accordance with a methodological protocol allocating the study of atmospheres, form, and construction. The acquired results shed light on a historical mode of construction adapted to a challenging natural environment, and they provide a valuable historical reference for contemporary tourism projects suitable for demanding contexts.

Keywords: Heritage atmospheres, colonial heritage, colonial architecture, Tourist facilities, Content analysis

INTRODUCTION

Durant l'époque coloniale, le tourisme fût un des secteurs les plus promus en Algérie (Lemaire, 2010). Et en dehors de la volonté d'affirmer la présence impériale en Algérie, le tourisme fût un outil adopté par les autorités françaises pour le développement de l'économie locale (Zytnicki, 2013). L'Algérie, vaste territoire et riche en matière de potentiel touristique naturel et culturel, est devenue un pays touristique par excellence durant cette période coloniale (Zytnicki, 2009). C'est ainsi que la ville de Biskra a commencé à acquérir le statut d'une grande oasis à caractère pittoresque et touristique pour les vacanciers européens (Pizzaferri, 2011). Et afin d'attirer ces derniers, les colonisateurs ont édifié plusieurs infrastructures touristiques (Fraser, 1911).

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Ces multiples hôtels et stations thermales constituent bel et bien un héritage architectural qui retrace les diverses tendances stylistiques de l'architecture coloniale en Algérie. A titre d'exemples, l'hôtel de l'Oasis ex Transatlantique, situé à M'sila, reflète le style néo-classique prôné durant la première période de la colonisation; la station thermale Hammam Melouane, par exemple, de la ville de Blida illustre, quant à elle, le style néo-mauresque initié par Charles Jonnart (Dali, Belakehal, 2023). Cependant, les traces que ce vaste réseau d'équipements touristiques a laissées auprès des touristes européens ne se limitent pas aux aspects physiques de ce cadre bâti. Bien au contraire, il s'étend vers ceux englobant leur vécu dans un milieu différent des leurs et au sein d'un cadre architectural qui les a fortement marqués. Les récits de voyage témoignent de ce fait et incitent à l'investir en vue d'identifier et cerner les caractères, au statut immatériel, dégagés par les composantes architecturales de ces lieux touristiques. A cet insu, cette recherche se focalise sur les ambiances relatées par ces touristes européens venus visiter l'Algérie et hébergés dans des lieux aux architectures mixant l'habituel et l'étranger pour eux.

AMBIANCE ET PATRIMOINE

Par ambiance, il est entendu ici ce rapport fondamentalement sensoriel entre l'usager et le lieu urbain et/ou architectural dans lequel il se trouve à un moment bien précis et au sein d'un contexte bien spécifié (Amphoux *et al.,* 1998; Belakehal, 2007). Depuis quelques temps, ce rapport est recherché, au moyen de travaux académiques, au sein de lieux historiques et il en est de même pour ses enjeux touristiques, grâce à l'architecture hôtelière (Berman, 2006; Stojanović, Đenadić, 2019). Cette recherche s'intéresse particulièrement à l'atmosphère caractérisant les lieux historiques et va donc au-delà du patrimoine matériel afin d'englober celui immatériel légués, tous les deux, par ces édifices touristiques historiques datant de l'époque coloniale française en Algérie. Il est à souligner que cet aspect sur lequel se focalise cette étude est officiellement reconnu en tant que patrimoine immatériel inhérent à celui matériel architectural (Belakehal, 2012).

De nombreux travaux sur les ambiances dans le domaine de la discipline de l'architecture et du patrimoine nous offrent un aperçu détaillé sur les diverses méthodes utilisées (Ben Hadj Salem, 2009; Belakehal, Farhi, 2008; Joanne, 2003). Selon ces travaux, les chercheurs ont toujours utilisé des documents historiques dans le but d'identifier les ambiances. Ces documents révèlent les vécus au sein même des objets d'études spécifiques aux recherches qui peuvent être de nature variée selon la recherche entreprise. Il pourrait s'agir de récits de voyages, ouvrages historiques, romans, ouvrages techniques, archives, affiches, cartes postales, photographies de même que des films et des bandes sonores. Ces sensorialités constitueront des références aussi bien pour la préservation des lieux anciens qu'ils relatent que pour la conception de nouveaux projets touristiques. Diverses expériences ont démontré la faisabilité et la notoriété d'une telle attitude dans le domaine de la préservation du cadre bâti (Mahroug, Belakehal, 2016; Chtara *et al*., 2016), (Fig. 1; Fig. 2).

Figure 1: La fontaine parfumée du Foundouk Al Attarine à Tunis, source: Auteurs, 2016.

Figure 2: Show musical contemporain dans la médina de Tunis, source: Chtara *et al.*, 2016.

Pour le cas de notre recherche, nous étudierons les ambiances dans les édifices touristiques érigés durant la période coloniale dans la ville de Biskra. A cet effet, les récits de vie, romans et autres sources textuelles et iconographiques demeurent l'unique témoignage conservé de ce vécu d'hier. Il est donc nécessaire d'effectuer un choix objectivement sélectif des textes et l'adoption d'une technique appropriée, en l'occurrence celle de l'analyse de contenu appliquée à un corpus de textes issus des récits de voyage des touristes européens ayant décrit leur séjour d'antan dans ces hôtels et stations thermales de Biskra.

L'ANALYSE DE CONTENU COMME METHODE DE RECHERCHE

Reconnue depuis le début de la deuxième moitié du XX^{e} siècle, l'analyse de contenu est une méthode à la fois quantitative et qualitative allouant une rigoureuse

étude scientifique des contenus textuels et/ou visuels de la communication, (Berelson, 1952; Holsti, 1965). (Quivy, Campenhoudt, 1997). Cette analyse est un examen systématique et méthodique des documents afin d'en tirer les significations des contenus (Mucchielli, 1996). Elle est largement utilisée dans le champ des sciences sociales et humaines, c'est-à-dire en psychologie, sociologie, linguistique, communication mais aussi en architecture.

En effet, dans le domaine de l'architecture, l'intérêt porté à l'étude des ambiances par le biais des sources textuelles et iconographiques daterait de la dernière décade du siècle dernier. Certains travaux scientifiques illustrent effectivement l'application de cette démarche (Amphoux *et al*., 2004; Amphoux *et al*., 1998; Adolphe, 1998; Lassance, 1998). Joanne (2003) par exemple, expérimente l'analyse de contenu comme méthode d'étude des qualités sensibles ressenties par les usagers des abbayes cisterciennes à travers des textes contemporains de la période investie. Cette analyse couvre les perceptions sensorielles, physiques, spatiales, subjectives et modales, métaphoriques et enfin temporelles de ces lieux de vie. De son côté, Kowaltowski (2003) analyse et met en lumière l'image, les spécificités et les caractéristiques des maisons traditionnelles de la région de Campinas à travers la littérature brésilienne. Cette étude tente aussi d'identifier l'importance donnée par les habitants aux éléments de conforts lumineux, thermique, acoustique, ergonomique et enfin la qualité de vie. Huit ouvrages ont été sélectionnés comme sources pour cette étude. Les images mentales déduites des espaces décrits dans les textes ont été exprimées par les habitants sous forme de dessins (croquis).

En Algérie, l'analyse de contenu fut adoptée pour étudier les ambiances environnementales de la médina (Belakehal, Farhi, 2008). Cette application a été effectuée sur quelques ouvrages littéraires et récits de voyageurs afin d'identifier et catégoriser les ambiances de certaines vieilles cités du monde arabo-musulman dont Alger, Tunis et Le Caire. L'étude en a décelé les différents stimuli à l'origine des ambiances en respect de la conformation et de la fonction des divers espaces urbains. Les ambiances contemporaines dans la Casbah d'Alger ont été approchées au moyen de la méthode des parcours commentés où l'analyse de contenu a été employée pour l'analyse de ces commentaires (Djedi, Belakehal, 2022). Plus focalisée sur les ambiances sonores de la Médina de Tunis, la recherche doctorale de Chtara (2016) illustre le recours de l'analyse de contenu des textes de récits de voyages. A l'échelle architecturale, cette méthode a servi d'abord pour l'étude des ambiances de la maison traditionnelle en Kabylie (Zidelmal, Belakehal, 2011; Zidelmal, Belakehal, 2016) et ensuite celles des habitations de la Casbah d'Alger (Zidelmal, Belakehal, 2016).

Pour le cas de la présente recherche, nous nous limitons aux ambiances dans les hôtels et les thermes de la ville de Biskra décelées dans des récits de voyageurs européens. Ainsi, c'est l'analyse du contenu thématique catégorielle (Bardin, 1977) qui est adoptée pour l'étude des ambiances spécifiques aux hôtels et thermes parmi celles relatées par les voyageurs dans leur récits relatifs à la ville de Biskra durant l'époque coloniale. Cette analyse aura comme thèmes à repérer: i) les stimuli

physiques desquels émergent les diverses ambiances, ii) les espaces et/ou dispositifs architecturaux, parmi ceux de l'hôtel et/ou thermes, dans lequel est narrée l'ambiance décelée.

Plus précisément, le protocole classique de la méthode est appliqué sur le corpus de textes sélectionnés pour la présente recherche (Ghiglione *et al*., 1980; Mucchielli 1974). Au sein de ces derniers, nous collecterons les évocations des phénomènes physiques et du sensible, puis nous les analyserons, catégoriserons et calculerons les occurrences, et finalement interpréterons des résultats.

PRESENTATION DU CORPUS TEXTUEL ET APPLICATION DE LA METHODE D'ANALYSE

Pour ce travail d'analyse, nous avons sélectionné trente-sept (37) ouvrages de diverses natures (Annexe 1). Cependant, les récits de voyages y dominent. A ceux-ci, nous avons également choisi des guides touristiques, journaux, revues, revues hebdomadaires, revues mensuelles, périodiques, revues scientifiques et une thèse de doctorat. La variété des objets du corpus d'étude revient au souci d'être le plus exhaustif possible en matière de textes décrivant la ville de Biskra de façon générale.

Notre corpus d'étude regroupe les ouvrages publiés durant la période coloniale et particulièrement entre 1861 et 1940. Nous nous sommons basés dans notre choix sur les documents retrouvés dans les archives de la bibliothèque numérique de la Bibliothèque Nationale de France (Gallica) et qui mentionnent les équipements touristiques de la ville de Biskra. Il est à souligner que la Bibliothèque Nationale de France est l'une des plus riches sources documentaires relatives à la France et à ses anciennes colonies (Duchesneau, 2014). La sélection des objets de ce corpus d'étude a requis un lourd et long travail de recherche en ligne sur les sources et dans leur contenu et qui a abouti, sans fixation et/ou délimitation préalable, au nombre de trente-sept (37) objets répondant aux critères de sélection.

Après avoir constitué le corpus textuel constitué de trente-sept (37) documents, nous avons entamé l'analyse de contenu des fragments textuels sélectionnés à la base de leur contenu incluant les équipements touristiques de Biskra d'abord, et ensuite les rapports sensoriels dedans. A titre d'exemple, l'ouvrage «*Algérie et Tunisie*» contient une citation qui indique de manière manifeste un rapport sensoriel lumineux: «*L'hôtel éclairé au gaz fabriqué sur place*» (Louis, 1898: 268), (Fig. 3). Le texte décrit les hôtels, thermes et casino de Biskra avec une attention particulière aux détails architecturaux et aux services offerts. L'hôtel Victoria est décrit comme une 'lourde construction sans caractère', ce qui pourrait refléter une impression négative de l'auteur sur son esthétique et son ambiance. En revanche, l'hôtel Royal est décrit comme étant 'construit par les architectes Laurent d'Alger et Gauthonnet de Biskra', avec une architecture impressionnante. L'utilisation d'adjectifs comme 'somptueux' pour décrire le casino (Dar-diaf) suggère une réaction émotionnelle positive de la part de l'auteur

sur son style mauresque et ses installations. Les thermes sont présentés comme étant actuellement simples mais promettant une amélioration future par la Compagnie de Biskra et de l'Oued-R'ir, ce qui révèle une anticipation positive pour leur développement et leur confort futurs.

Figure 3: Éclairage avec le gaz dans l'hôtel Royal. Source: Auteurs, 2024.

Dans un autre ouvrage «*Voyages d'un picard*», ce rapport est relaté de manière latente: «*à gauche, une longue suite de maisons avec arcades destinées à combattre les effets des rayons solaires; au milieu de cette rue, se trouve l'hôtel du Sahara*» (Grison-Poncelet, 1898: 343), (Fig.4).

Figure 4: Ombrage des arcades de l'hôtel du Sahara. Source: Auteurs, 2024

Par la suite, nous avons analysé les citations une par une et déterminé les ambiances prélevées, les canaux sensoriels, les compositions architecturales et les équipements touristiques de Biskra sujet des textes étudiés. Ainsi, il a été possible de catégoriser les occurrences et de calculer leurs fréquences en mode manifeste et/ou latent. La catégorisation s'est faite à la base des composantes de l'ambiance en ces lieux historiques en soi à savoir le signal à son origine (visuel, sonore, etc.), l'espace architectural où se produit l'ambiance (les hôtels de Biskra) et le composant urbain et/ou architectural à travers lequel se manifeste le signal même (le site immédiat, l'édifice de l'extérieur et enfin ses espaces intérieurs).

Ainsi, il est question de l'hôtel du Sahara, la place principale de la ville française de Biskra catégorisée comme Site environnant et le bruit du vent dans les arbres qui sont soulignés et décelés dans l'ouvrage «*Six semaines en Afrique*» dans la citation suivante : «*L'hôtel du Sahara fait partie d'un ensemble de bâtiments qui décorent la place principale de la ville française de Biskra. Cette place n'est pas encore achevée on y plante une allée d'arbres pour donner de l'ombre*» (Thierry-Mieg, 1861: 233). Le texte de Thierry-Mieg révèle des jugements variés sur les constructions observées à Biskra: 'originale', 'appropriée', 'excellente', 'informe', et 'sans goût'. Ces descriptions reflètent des perceptions contrastées vis-à-vis de l'architecture locale. L'atmosphère des villes avec des rues larges et des grandes fenêtres est jugée étouffante sous le soleil et la poussière, tandis que les rues à arcades sont perçues comme plus attirantes, offrant un environnement adapté au climat local et agréable à vivre.

Une fois que cette étape fût achevée, une base de données a été construite regroupant l'ensemble des citations décelées et les caractéristiques qui leur sont affiliées en matière de composantes des ambiances. Par la suite, une analyse statistique univariée a été effectuée sur ces données pour identifier les occurrences et les taux de fréquences.

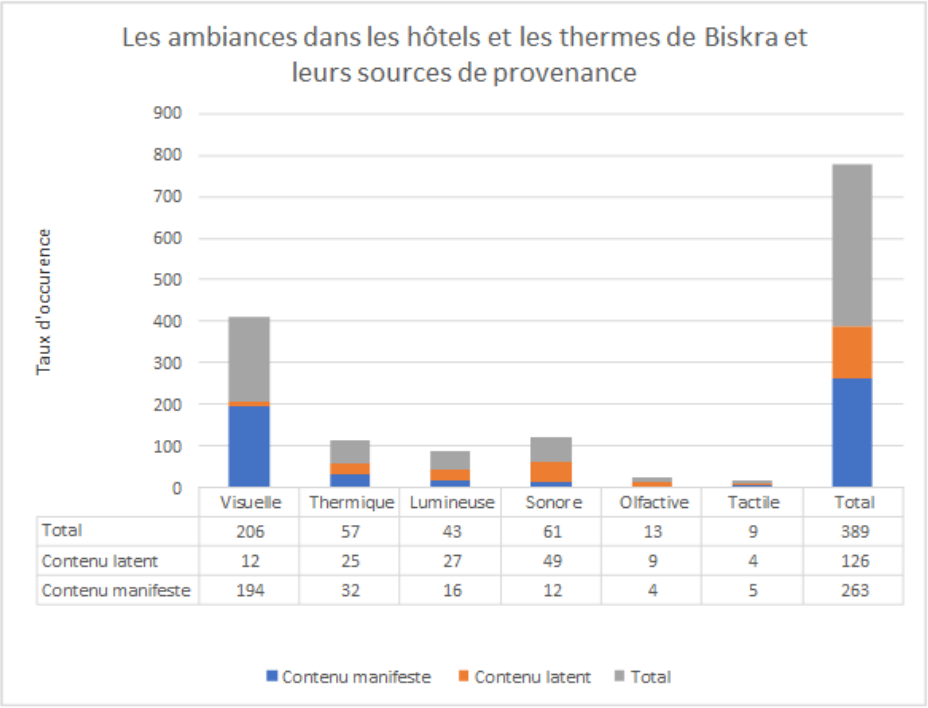
LES AMBIANCES LES PLUS ÉMINENTES

Les ambiances les plus évoquées par les voyageurs européens et cités dans le corpus textuel étudié sont engendrées par un ensemble d'activités humaines. Les composantes spatiales et architecturales des équipements touristiques participent à la création de tous les types d'ambiances selon un ordre d'importance révélé par l'analyse de données collectées (Table 1).

Les ambiances visuelles sont en première place avec 206 occurrences, dont 194 (94.2%) sont exprimées avec un mode de contenu manifeste et 12 (5.8%) seulement en mode de contenu latent. Selon les textes étudiés, leurs auteurs évoquent l'architecture, matériaux de construction, installations, situation dans la ville, vues panoramiques, couleurs des parois, planification et organisation spatio-fonctionnelle des espaces intérieurs, aménagement, formes, dimensions, objets, ameublement, commodité et confort, etc. Un exemple est rencontré dans l'ouvrage «*Voulez-vous connaitre l'Algérie*», un journal de voyage de Carteron

Charles dans ce qu'il appelle l'Afrique française, publié en 1866. Son voyage l'emmène au désert pour la découverte de la vie calme et mouvementée des Arabes en Algérie. Et Biskra fait bien partie de son itinéraire touristique: «*Quelque temps après nous arrivons aux sources chaudes du Hammam-Salahin. Elles sortent en bouillonnant d'un creux en forme d'entonnoir; elles ont 45 degrés de chaleur et sont bonnes pour les rhumatismes; c'est pourquoi l'on a construit autour un mur d'enceinte en terre et quelques chambres garnies de nattes pour les malades*» (Carteron, 1866: 338). En effet, en plus de l'ambiance thermique et sonore, indiquées par les termes 'chauds' et 'bouillonnant', les mots 'creux', 'entonnoir', 'enceinte', 'nattes' et aussi 'terre' renvoient à des signaux '*visuels*' relatant, respectivement, l'ordre entre autres pour la forme, dimensions, texture et couleur.

Table 1.
Diagramme et tableau des ambiances dans les hôtels et les thermes de Biskra et leurs sources de provenance, Source: Auteur, 2024



	Visuelle	Thermique	Lumineuse	Sonore	Olfactive	Tactile	Total
Total	206	57	43	61	13	9	389
Contenu latent	12	25	27	49	9	4	126
Contenu manifeste	194	32	16	12	4	5	263

Ensuite, nous avons les ambiances sonores en deuxième place avec un taux de 61 occurrences enregistrées. Douze (12) sont en mode contenu manifeste (19.7%) et 49 sont en mode de contenu latent (80.3%). Nous remarquons, selon l'analyse des ouvrages, que l'environnement sonore est l'élément principal, car il désigne le champ de l'espace contenant des signaux sonores émis soit par une source interne ou bien une autre externe. Les éléments les plus évoqués dans les textes et qui représentent les ambiances sonores sont nombreux. Nous citerons le

son et la musique des spectacles dans les rues, le bruit des hiverneurs dans les hôtels et des baigneurs dans les bains, le gargouillement des eaux, le bruit des moustiques et des mouches dans les chambres, les distractions des jeux dans le casino, bruits des chevaux, des voitures et de l'hippomobile, bruit des gazelles dans la cour, calme dans les hôtels, etc.

Ceci est décelable au sein d'une citation du livre «*Constantine, voyages et séjours*», écrit par Louis-Marie Régis. Elle nous y fait découvrir son excursion à Biskra de manière très explicite et de son séjour à l'hôtel du Sahara. Durant une soirée, elle y est fascinée par un spectacle dont les sons provenaient de l'extérieur de l'hôtel. Elle en dit: «*Attirée par le ronflement lointain d'un tambour de basque et de tambourins, je m'étais avancée à l'entrée de la maison en demandant à Si-Mohammed d'où pouvait provenir ce bruit; il me désigna une agglomération de petites maisons, du côté opposé de la place, en me disant que là étaient les cafés maures dans lesquels dansaient les femmes de la tribu des Ouled-Nayls qui habitent, tout un quartier de Biskra*» (Régis, 1880: 192). L'analyse dévoile une appréciation positive de l'hôtel du Sahara à Biskra (Medan). Les chambres sont qualifiées de 'bonnes', 'simples' et 'propres' «*Nous étions heureusement les seuls hôtes de madame Medan. Les quatre bonnes chambres que possède l'hôtel ouvrent, les unes à côté des autres, sur le petit jardin qui forme le milieu de la maison*» (Régis,1880: 192). Le jardin central est décrit comme 'agréable', avec une tonnelle de treillage sur laquelle grimpent des 'vignes' et des 'mimosas'. Les allées sont divisées par des treillages garnis de 'passiflores'. L'environnement est jugé 'paisible'. L'hôtel est 'bien équipé' avec des lits 'propres' et des meubles 'simples'. L'extérieur de l'auberge, donnant sur un terrain 'nouvellement planté', est prévu pour devenir un 'beau' square.

Les ambiances thermiques, quant à elles, sont en troisième position avec pas plus de 57 occurrences; 32 sont en mode de contenu manifeste (56.1%) et 25 sont en mode de contenu latent (43.9%). Les ambiances thermiques, relevées dans les textes étudiés, concernent en général le ressenti des auteurs (usagers) vis-à-vis de la température de l'air et celles émises par les diverses parois des espaces. Comme Biskra est considérée une station touristique hivernale, le climat est beaucoup mentionné dans les textes étudiés et de surcroît la température des eaux et de l'air, fraicheur des ombres, chaleur dans la chambre et le jardin, etc. Plus fréquemment, les ambiances thermiques sont soulignées dans les espaces où les auteurs séjournèrent couramment comme les chambres. Également, dans le livre «*Un mois de soleil*» écrit par un commandant militaire anonyme, ce dernier parle d'une manière brève, de l'hôtel du Sahara, de l'hôtel Royal et du casino. Il évoque, comme dans beaucoup d'autres ouvrages, la chaleur nocturne comme signal de l'ambiance y régnante: «*Comme on serait tenté de passer plusieurs jours dans cette ville de plaisirs, malgré la chaleur des nuits*» (Commandant, A.A., 1908: 34). L'auteur décrit Biskra comme une ville attrayante avec ses hôtels luxueux, ses monuments élégants et modernes. Les termes utilisés comme 'luxueux', 'élégants', et 'modernes' indiquent une satisfaction et une appréciation positives envers l'architecture et l'ambiance de ces établissements.

En quatrième place se situe l'ambiance lumineuse avec un taux qui atteint les 43 occurrences dont 16 (37.2%) sont manifestement exprimées, et 27(62.8%) sont exprimées de manière latente. Nous remarquons aussi que dans les textes il existe deux sources de lumière qui peuvent influencer l'environnement physique d'un espace architectural et/ou urbain. La première est naturelle et provient du soleil et du ciel ou bien réfléchie par les sols et constructions avoisinants. Cette lumière est admise à l'intérieur des espaces à travers les diverses baies situées sur les différentes parois des bâtisses. La deuxième source est la lumière artificielle d'abord émise par des lampes et des luminaires et ensuite réfléchie par les surfaces des parois et des objets, etc. Dans l'ouvrage «*Espagne, Algérie et Tunisie, lettres à Michel Chevalier*», nous en trouvons un bel exemple. Ce livre est un ensemble de lettres de Petr Aleksandrovitch Tchikhatchev adressé à Michel Chevalier, un politicien français qui a vécu au XIX^{e} siècle. Ainsi, ces lettres ont été publiées sous forme de livre en 1880. L'auteur y raconte ses aventures en Espagne, puis l'Algérie et enfin la Tunisie. Son voyage l'amène vers Biskra où il séjourne dans l'hôtel du Sahara, un des rares hôtels qui existait dans la ville durant cette époque. Il en décrit, de façon latente, la lumière tamisée du jardin intérieur qui est couvert par un toit en treillage tapissé par les branches grimpantes de la vigne: «*On entre à Biskra par une belle avenue d'acacias conduisant tout droit au petit hôtel du Sahara, hôtel évidemment trop restreint et trop resserré, si le beau ciel du pays ne permettait de convertir en salon ou cabinet de travail la cour intérieure de l'hôtel, abritée contre le soleil par un toit en treillage tapissé par les branches grimpantes de la vigne dont les grappes commençaient à se charger de fruits*» (Tchikhatchev, 1880: 288). L'analyse met en évidence une perception globalement positive de l'hôtel du Sahara à Biskra. L'avenue d'entrée est décrite comme 'belle' avec des acacias. L'hôtel lui-même est qualifié de 'petit', 'trop restreint' et 'trop resserré'. Cependant, la cour intérieure est jugée 'agréable' et 'utile', transformée en salon ou cabinet de travail grâce au 'beau ciel' du pays et abritée par un toit en treillage tapissé de branches grimpantes de vigne. Cette cour est 'ornée' de palmiers et de fleurs diverses, et 'pittoresque'. Les petites tables entourées de chaises permettent aux clients de l'hôtel de 'prendre leurs repas' ou de 'travailler'.

La cinquième place est occupée par les ambiances olfactives. Le taux d'occurrence correspondant est très bas et n'atteint pas 13 occurrences. Quatre (4) (30.7%) sont en mode de contenu manifeste et neuf (9) (69.3%) sont en mode de contenu latent. D'après les textes analysés, nous ne prélevons ces ambiances que dans les bains des thermes. En effet, les auteurs parlent surtout de l'odeur des eaux et la qualifient de sulfureuse et/ou nauséabonde. Dans son journal de route intitulé «*Sahara algérien et tunisien. Journal de route*», Henri Duveyrier raconte les faits de sa promenade à pied à Hammam-es-Salahin et fait part de sa petite expérience et de l'odeur dégagée par cet établissement: «*Les bains sont entourés d'une construction, avec des chambres pour la commodité des baigneurs. Les eaux sont salées et ont, de plus, une forte odeur d'hydrogène sulfuré*» (Duveyrier, 1905: 5–6), (Fig.5).

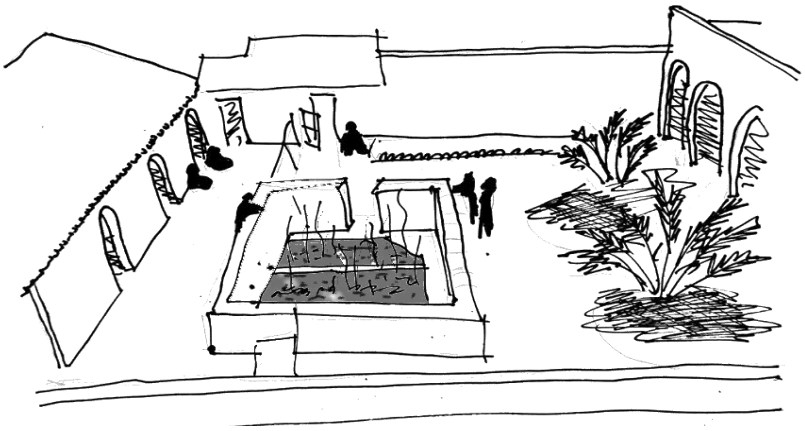


Figure 5: Hammam-es-Salahin et l'odeur des eaux. Source: Auteurs, 2024.

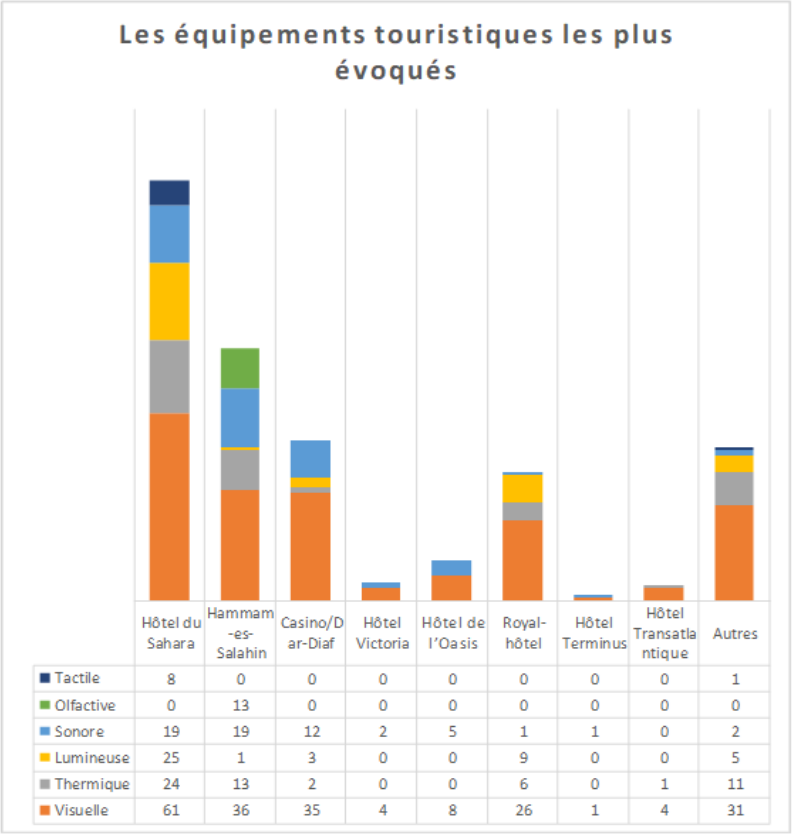
Finalement, les ambiances tactiles se révèlent être celles enregistrées au plus bas par rapport aux autres avec un taux qui ne dépasse pas les neuf (9) occurrences. Cinque (5) (55.5%) sont en mode de contenu manifeste et les quatre (4) (44.5%) autres sont en mode de contenu latent. Dans l'ouvrage d'Émile Bourquelot, par bon exemple, l'écrivain nous décrit une scène très représentative de l'ambiance tactile dans l'hôtel du Sahara. Il y évoque le contact avec la peau de l'air frais matinal : «*L'air matinal est frais, presque piquant; sur la coupole bleue du ciel flottent quelques nuages blanchâtres si légers, si vaporeux, qu'ils ressemblent à des flocons de neige ou encore à des plumes d'autruches que le vent à bientôt dispersés au loin*» (Bourquelot, 1881: 322). L'ouvrage décrit l'hôtel Victoria de manière détaillée. Les chambres, situées dans une aile des bâtiments du rez-de-chaussée, sont 'simples' et 'modestes', avec un mobilier minimaliste suffisant pour les besoins des touristes. L'ambiance est 'relativement fraîche' et d'une 'austérité monacale', rappelant les humbles cellules monastiques. La petite et étroite fenêtre laisse pénétrer une lumière 'discrète'. L'extérieur contraste avec l'intérieur, étant plus attrayant avec un jardin où poussent de 'jeunes palmiers' et des arbres fruitiers, créant une atmosphère agréable. L'allée principale est ornée de vigne formant des 'festons élégants' avec des grappes en développement, ajoutant une touche pittoresque à l'hôtel.

LES ÉQUIPEMENTS TOURISTIQUES

Dans les textes analysés, nous avons pu identifier 8 équipements touristiques: six (6) hôtels, 1'hôtel-casino et 1'hôtel-thermes. Dans plusieurs ouvrages, nous remarquons que les auteurs évoquent simultanément plusieurs équipements. Cependant, nous avons analysé les ouvrages selon un ordre chronologique croissant, depuis le plus ancien publié jusqu'au plus récents en termes de parution, (1861–1940). Ainsi, nous organisons le classement des équipements selon le même ordre de leurs citations dans les ouvrages. Le plus ancien hôtel cité dans les ouvrages est: i) l'hôtel du Sahara, il est suivi de ii) Hammam-es-Salahin, iii) le casino et son

hôtel Dar-Diaf, iv) l'hôtel Victoria, v) l'hôtel de l'Oasis, vi) l'hôtel Royal, vii) l'hôtel Terminus et enfin viii) l'hôtel Transatlantique (Table 2). Ce classement nous donne aussi une idée sur les périodes de construction des équipements.

Table 2.
Diagramme et tableau des équipements touristiques évoqués, Source: Auteur, 2024



	Hôtel du Sahara	Hammam-es-Salahin	Casino/Dar-Diaf	Hôtel Victoria	Hôtel de l'Oasis	Royal-hôtel	Hôtel Terminus	Hôtel Transatlantique	Autres
Tactile	8	0	0	0	0	0	0	0	1
Olfactive	0	13	0	0	0	0	0	0	0
Sonore	19	19	12	2	5	1	1	0	2
Lumineuse	25	1	3	0	0	9	0	0	5
Thermique	24	13	2	0	0	6	0	1	11
Visuelle	61	36	35	4	8	26	1	4	31

L'ambiance olfactive est bel et bien spécifique à Hammam es-Salahin, et l'hôtel le plus évoqué en matière d'ambiances est le Sahara, au sein de notre corpus d'étude. Cet hôtel est suivi de trois autres édifices, à savoir Hammam es-Salahin, le casino et ensuite l'hôtel Royal. Alors que les trois hôtels sont situés en plein centre-ville, relativement aux autres hôtels, le hammam est en dehors du tissu urbain. Ceci expliquerait éventuellement le taux de fréquentation des hôtels et leurs présences dans les discours.

L'hôtel du Sahara est celui qui fut cité dans les premiers ouvrages publiés durant la deuxième moitié du XIX^{e} siècle. Les ambiances évoquées dans ce bâtiment présentent 137 occurrences (35%); le plus haut dans cette recherche. Ceci n'est nullement étonnant car le bâtiment est aussi parmi les équipements qui sont le plus cité, nous le trouvons dans 21 ouvrages parmi les trente-sept (37) étudiés. Au sein de ces livres, nous pouvons citer «*Le Sahara premier voyage d'exploration*».

Victor Largeau, qui est l'auteur de cet ouvrage publié en 1877, raconte une de ses aventures dans ce qu'il nomme les parties inconnues du Sahara. Biskra était une de ses destinations. De plus, il était logé dans l'hôtel du Sahara, où il prend soin de décrire même son entourage: *«Vers le milieu de la rue principale se trouve l'Hôtel du Sahara, très-confortablement tenu par M. Médan; un peu plus loin, on remarque le Cercle de MM. les officiers, tout récemment construit*» (Largeau, 1877: 19). L'analyse de l'ouvrage révèle une qualification positive de l'architecture et des équipements urbains de Biskra à l'époque coloniale. L'hôtel du Sahara est décrit comme 'très-confortablement tenu', ce qui suggère une expérience agréable pour les visiteurs. Les arcades bordant la rue sont particulièrement remarquables, avec une construction si bien réalisée qu'elles peuvent être confondues avec des pierres, contrastant avec les maisons locales en briques séchées au soleil mais bien entretenues.

Le deuxième édifice cité dans les ouvrages est sans doute le Hammam-es-Salahin et son hôtel (21%). Le taux d'occurrence des ambiances dans ce dernier s'élevé à 82, un des taux les plus élevés parmi ceux analysés dans ce travail. Ceci n'est absolument pas surprenant, vu que c'est aussi un des bâtiments les plus cités. Nous le rencontrons dans 17 ouvrages différents, des récits de voyages, des revues, des guides pratiques, etc. Parmi eux, nous citons «*Guide pratique de Biskra et de ses environs*». Ce texte est une sorte de guide pratique pour ceux qui veulent venir à Biskra. Il offre beaucoup d'informations sur la ville, comme les moyens de transport, les endroits et sites à visiter, activités à faire, etc. Le guide est écrit par Emmanuel Mallebay et publié en 1892, c'est le fruit de son excursion dans la ville de Biskra où il parle du fameux Hammam-es-Salahin: «*L'Hammam-Salahin (le bain des saints) est la propriété de la Cie de Biskra et de l'Oued-Rirh qui y a fait en 1891 quelques améliorations en attendant qu'elle construise un véritable établissement de bain*» (Malleray, 1892: 23). Un autre exemple est celui du périodique «*Gouvernement général de l'Algérie*», publié en 1911 et écrit par le Professeur Maurice Hanriot. Les eaux minérales de l'Algérie sont le sujet principal de ce périodique. Sur une des pages, nous relevons une description du fameux Hammam-es-Salahin: «*En 1900, la compagnie de l'Oued Rir, qui avait affermé la concession des sources moyennant un loyer annuel de 7.500 francs, a fait construire un élégant établissement, de style arabe, à l'usage des Européens. Celui-ci renferme deux piscines et huit salles de bains faisant face à l'ancien établissement, dont il est séparé par une cour où se trouve le réservoir de la source*» (Hanriot, 1911: 124–125). L'auteur présente une description détaillée et objective du Hammam-es-Salahin, mettant en avant les aspects fonctionnels et les équipements disponibles. L'impression générale est positive s'exprimant au moyen de qualificatifs tels que 'élégant', 'à l'usage des Européens', 'prospère', et une mention de la modernité des installations comme les piscines à eau courante et les temps de remplissage rapides des baignoires. L'auteur paraît bien apprécier la prospérité et l'efficacité de gestion de ces établissements, soulignant également l'utilisation différente entre les baigneurs européens et indigènes, ainsi que la popularité accrue du hammam indigène pendant l'été.

Le casino et son hôtel Dar-Diaf, appelé aussi Cercle des Étrangers, est un équipement qui enregistre 52 occurrences (13%), un taux moyennement élevé. Nous soulignons que parfois les auteurs parlent du casino, parfois de l'hôtel et parfois des deux. Cela-dit, il a une présence assez importante dans plus de 11 textes. Nous citons l'ouvrage «*Au pays des palmes Biskra*», un récit de voyage écrit par Félix Hautfort qui est tombé sous le charme des palmiers de la ville de Biskra. Le livre est publié vers la fin du XIX^{e} siècle, à savoir en 1897. Ce récit n'est pas une sorte de guide touristique pour Biskra, mais l'auteur a pris soin de parler de la ville et de la décrire d'un point de vue touristique, les endroits les plus importants à visiter, comme le marché, les jardins, le Ksar, et même les fêtes qu'on y rencontre. Il évoque ici, à plusieurs reprises, certains équipements touristiques hôteliers des plus importants de la ville à cette époque. C'est notamment le cas du casino et particulièrement son ambiance sonore intérieure exprimée de façon latente à travers le terme 'Spectacle': «*Un casino leur offre le régal des spectacles inédits, et fixe pour des mois ceux que seule la nature exotique attirait pour la satisfaction d'une simple curiosité*». (Hautfort, 1897: 135). Aussi, les descriptions des hôtels, thermes et du casino de Biskra soulignent une amélioration notable dans les installations touristiques, décrites comme étant 'luxueusement installées', 'complètes' et 'confortables'. Ces termes positifs reflètent une satisfaction générale de l'auteur concernant le niveau de confort et les commodités offertes par ces établissements. Cette évolution est présentée comme un facteur crucial qui rend Biskra attrayante non seulement pour son climat doux et ses paysages pittoresques, mais aussi pour ses infrastructures modernes qui répondent aux attentes des voyageurs exigeants.

Nous trouvons dans les textes publiés, par la suite, l'hôtel Victoria qui n'est cité que dans 3 ouvrages. Avec un taux d'occurrence qui ne dépasse pas les 6 (1.5%), il est d'une moyenne très faible par rapport aux cas d'études déjà mentionnés. Nous donnons comme exemple le livre «*En Algérie*» publié en 1896 racontant l'aventure de Arthur de Claparède en Algérie. L'ouvrage est une sorte de lettres que l'auteur a pris soin d'écrire et de regrouper dans cette œuvre après avoir passé l'hiver dans ce pays, en passant de Philippeville, à Constantine jusqu'à Biskra où il fut logé dans l'hôtel Victoria: «*Nous nous sommes installés à l'hôtel Victoria qui est situé à l'entrée de la ville et après le dîner, nous avons fait une promenade*» (De Claparède, 1896: 31). Dans cette citation, un rapport sensoriale sonore est exprimé de manière latente, car l'hôtel Victoria est situé loin du centre-ville, dans un quartier calme et paisible. De plus, les textes qualifient l'hôtel Royal et le casino des Étrangers comme étant 'le plus bel édifice de la ville' à Biskra, mettant en avant leur grandeur et leur importance architecturale. L'auteur décrit également le Hamman-es-Salahin comme une bâtisse 'moins que primitive' avant sa rénovation, soulignant son caractère rudimentaire et la nécessité d'améliorations «*encore que l'installation soit moins que primitive. Un grand bassin à ciel ouvert et quatre ou cinq petites piscines sous toit et fermées. C'est tout. On travaille en ce moment à la construction d'un établissement mieux ordonné*» (De Claparède, 1896: 53).

Pareil au précèdent, l'hôtel Oasis a aussi une présence assez faible avec des citations dans pas plus de 5 ouvrages. Nous enregistrons dans ces dernières que 13 occurrences (3.5%), un nombre aussi faible que dans le dernier hôtel. C'est le cas par exemple de l'ouvrage «*Bulletin du photo-club de Constantine*». La publication est une sorte de journal mensuel de 1895 qui nous donne beaucoup d'informations sur la ville de Biskra. Elle décrit d'une manière assez spéciale l'hôtel de l'Oasis où les membres du club ont passé leur séjour: «*Nous devisons gaiement jusqu'à Biskra, où le train nous dépose à six heures et demie du soir. L'Hôtel de l'Oasis, tenu par M. Mazué propriétaire, nous a offert pendant notre séjour dans la reine des Zibans une hospitalité simple et cordiale, dont nous garderons le meilleur souvenir. Chambres, cuisine, voitures, domestiques, service et propreté, prix raisonnables: tout est digne d'éloges à l'hôtel de l'Oasis*». (Photo club de Constantine, 1895: 47). Le texte nous offre plusieurs ambiances dont une qui indique de manière un rapport sensoriel visuel. En effet, en plus de l'ambiance visuelle indiquée, de façon latente, par le terme 'propreté', le mot 'voiture', renvoie à un signal 'sonore', c'est-à-dire au bruit émis par les véhicules à cheval ou aux calèches. Leurs bruits est un élément distinct qui fait partie de l'expérience liée à ces moyens de transport (carrosse tirée par un cheval, hennissement de cheval, etc.).

L'hôtel Royal, quant à lui, est cité dans 9 textes avec un taux d'occurrence qui s'élève à 42 ambiances au total (11%), une moyenne un peu élevée. De plus, nous commençons à remarquer la vocation de cet hôtel dans les ouvrages publiés vers la fin du XIX^{e} siècle, comme le livre de Grison-Poncelet publié 1898. Cet ouvrage fut publié suite à l'initiative du congrès de l'Association française pour l'avancement des sciences en vue de préparer des excursions récréatives. Le texte présent est une sorte d'itinéraires touristiques de ville dans des régions éloignées comme la ville de Biskra. D'ailleurs l'auteur nous apprend beaucoup sur plusieurs équipements touristiques tel que l'hôtel Royal «*jetez un coup d'œil à l'intérieur: le rez-de-chaussée est de style mauresque et est surmonté d'un étage avec terrasse; sur le jardin anglais planté dans la cour intérieure donne la salle à manger qui peut contenir quatre cents couverts; sur la façade s'élève un minaret de. 27m50 de hauteur et duquel on a une vue très étendue sur le désert, les oasis et les montagnes lointaines; c'est stupéfiant*» (Grison-Poncelet, 1898: 343), (Fig.6). Plusieurs ambiances sont exprimées dans ce texte de manières manifestes et latentes. Les mots 'rez-de-chaussée', 'style mauresque', 'terrasse', 'minaret' et 'vue très étendue', renvoient à des signaux 'visuels'. Le terme 'jardin anglais' exprime un signal sonore latent 'lumineux' et aussi 'thermique', car les arbres du jardin offrent de l'ombre et de la fraicheur à l'intérieur de l'hôtel. L'hôtel Royal est décrit de manière élogieuse 'splendide', 'stupéfiant', et 'absolument incompréhensible', soulignant son ampleur et son architecture mauresque imposante. L'auteur exprime une admiration pour les installations intérieures, la terrasse surplombant le désert, et le minaret offrant une vue panoramique, ce qui témoigne d'une impression très positive et d'une anticipation de réussite pour cet établissement. Le texte inclut également des descriptions détaillées et des impressions contrastées sur les autres établissements de Biskra. L'hôtel du Sahara est décrit comme 'accueil aimable', 'chambres

confortables', et 'bonne table', suggérant un effet positif et satisfaisant sur l'auteur relativement au confort et à l'accueil offerts. En revanche, le casino, bien que décrit comme 'installation luxueuse', présente des peintures non terminées, ce qui pourrait indiquer un certain inachèvement ou une déception par rapport aux attentes initiales. Malgré cela, les salles de jeux, de spectacle et de conversation sont louées, et l'auteur est bien saisi par la richesse des décorations et des photographies, notamment celle d'une Ouled-Naïd, même si cette dernière est décédée. En somme, le texte de Grison-Poncelet reflète une variété de sentiments, oscillant entre satisfaction pour le confort des hôtels et casino, et une légère déception pour les détails inachevés, tout en exprimant une grande admiration pour l'ambition et la grandeur des constructions à Biskra.

Figure 6: Jardin de l'hôtel Royal. Source: Auteurs, 2024.

L'équipement le moins cité est sans aucun doute l'hôtel Terminus. Nous ne soulevons que 2 ambiances (0.5%), le taux le plus faible parmi le corpus d'ouvrages étudiés. D'ailleurs, nous ne le trouvons que dans un seul ouvrage, celui de l'abbé Jean Hurabielle publié en 1899, qui y raconte son voyage d'Alger vers Biskra. Il était parti en septembre 1898 pour préparer l'arrivée du notoire cardinal Lavigerie. Comme tous ceux qui l'ont précédé à la visite de la région, il a été impressionné par le paysage du Sahara. Ce livre peut aussi être considéré comme un guide touristique hôtelier, puisqu'il évoque les hôtels les importants de la ville, et les décrit d'une manière assez détaillée et précise. Il parle de plusieurs hôtels, cependant, il s'arrête un moment pour parler de l'hôtel Terminus: «*L'Hôtel Terminus depuis peu de temps est devenu une maison meublée; il se trouve auprès de l'Hôtel Victoria*» (Hurabielle, 1899: 21). Cette citation exprime de manière latente un sensorial 'sonore' évoquant le calme régnant dans ce lieu en l'occurrence proche de l'hôtel Victoria et donc loin du bruyant centre-ville. Aussi, l'ouvrage

offre une vue détaillée et contrastée des hôtels et du casino de Biskra. L'hôtel du Sahara est présenté comme recommandable à tout égard, avec des qualificatifs comme 'accueil aimable', 'chambres confortables', et 'bonne table', ce qui indique une satisfaction générale de l'auteur en matière de commodités et d'emplacement de cet hôtel. L'hôtel Victoria, bien que décrit comme 'très confortable', est critiqué pour son emplacement mal situé près de la gare, ce qui suggère une légère réserve malgré ses bonnes installations. L'hôtel de l'Oasis est loué pour son aménagement 'superbement' réalisé, et est également jugé 'très recommandable et très sérieux'. L'hôtel Royal est décrit comme le plus somptueux de tous, avec une architecture mauresque remarquable. L'auteur exprime une grande admiration pour ses dimensions imposantes, son minaret dominant, et ses installations modernes confortables, attirant principalement une clientèle fortunée, surtout britannique. En ce qui concerne le Dar-Diaf, le texte décrit un casino luxueux, édifié dans le style mauresque avec des références à des monuments célèbres comme l'Alhambra de Grenade. L'auteur est fasciné par son architecture et ses installations de divertissement variées, telles que les salles de jeux, de spectacle, de lecture, et les salons de conversation, décrivant le casino comme un 'palais de féerie' dans un cadre magique d'oasis et de jardins exotiques. En résumé, le texte de Hurabielle offre une vision riche et détaillée des établissements touristiques à Biskra, mettant en avant leurs caractéristiques architecturales, leur confort, et l'ambiance cosmopolite et festive qui attire une clientèle internationale diversifiée pendant la saison hivernale.

L'hôtel Transatlantique est présent dans 2 textes. Nous avons réussi à y déceler seulement 5 ambiances au total (1.3%), c'est très faible comme taux. Par ailleurs, nous croisons cet équipement touristique dans un des derniers textes analysés. Nous trouvons dans les documents parus à partir de 1927 tel que «Paris-midi: seul journal quotidien paraissant à midi», un entretien entre un journaliste et une artiste qui avait séjourné à Biskra qui ne manque pas de parler de l'hôtel transatlantique: «*J'ai fait avec J. de Baroncelli un admirable voyage dans le Sud-Algérien. Biskra, son magnifique hôtel transatlantique et tous ses coins pittoresques ont un charme qui amènera dans cette région des touristes de plus en plus nombreux*». (De Waleffe, 1927: 5). Le texte exprime un positionnement très favorable à l'égard de Biskra et ses attractions touristiques. Il décrit Biskra comme une destination dotée d'un charme magnifique, mettant en avant spécifiquement l'hôtel transatlantique et les lieux pittoresques de la région. Les qualificatifs comme 'admirable' et 'charme' indiquent une forte attitude pour l'expérience vécue à Biskra.

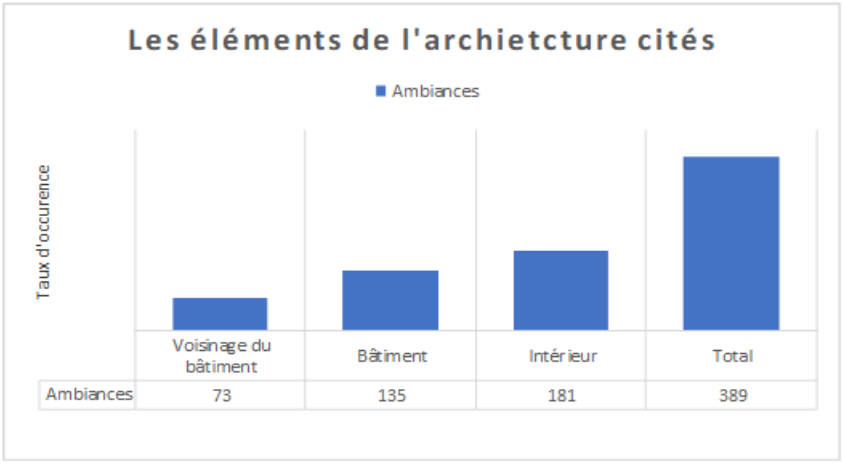
Les auteurs évoquent parfois les hôtels et les thermes de Biskra, sans toujours préciser le nom exact des établissements. Ils en donnent toutefois une description plus ou moins détaillée. A ce moment, nous parlons d'un taux d'occurrence qui atteint les 50 (12.85%), c'est un taux moyennement élevé. Un exemple typique est le livre de Paul Bourde publié en 1880. Cet ouvrage est l'histoire d'une expédition qui était une sorte de caravane parlementaire dont l'auteur en faisait partie, et qui avait embarqué de Marseille afin d'aller explorer l'Algérie dans la période entre

septembre et octobre 1879. Le but était de chercher des éléments favorables qui devaient aider au développement de ce pays. Leur voyage les a conduits à Biskra. D'ailleurs, l'auteur nous offre une description plus au moins riche en ambiances, des constructions dans la ville d'une manière générale: «*Les constructions qu'ils ont élevées dans la ville nouvelle sont inspirées directement de la manière de bâtir indigène d'épaisses murailles en briques sèches impénétrables à la chaleur, des maisons qui n'ont que le rez-de-chaussée et semblent s'accroupir sur le sol pour échapper aux rayons du soleil, des arcades qui empêchent la lumière d'arriver doctement jusqu'aux fenêtres*» (Bourde, 1880: 135). L'analyse montre une observation critique mais respectueuse de l'architecture locale à Biskra durant la période coloniale. Les constructions de la ville nouvelle sont décrites comme directement inspirées de l'architecture locale, caractérisées par des murs épais en briques sèches qui sont efficaces contre la chaleur. Les maisons à un seul étage semblent être conçues pour minimiser l'exposition au soleil intense, adoptant ainsi une adaptation climatique locale. Les arcades sont mentionnées pour leur rôle crucial dans la modulation de la lumière, créant des espaces ombragés et tempérés.

LES ELEMENTS DE L'ARCHITECTURE LES PLUS CITES

Dans ce qui suivra, il est question d'identifier les composants architecturaux participant à la génération des ambiances dans les divers équipements touristiques étudiés. Ces éléments d'architecture avaient déjà été organisés en trois grandes catégories: i) Site environnant, ii) Édifice, et iii) Espace intérieur (Table 3). Nous présentons aussi pour chaque catégorie, les différents éléments (sous catégories) qui se situent au sein les catégories principales. Les ambiances des équipements touristiques représentent d'une certaine manière, le caractère / esprit de ces lieux présentés comme des scènes par les auteurs et qui reflètent l'identité de ces lieux.

Table 3.
Diagramme et tableau des éléments de l'architecture cités, Source: Auteur, 2023



Le taux d'occurrence le plus élevé est celui de la catégorie 'Espace intérieur'. Nous enregistrons au total 181 ambiances, soit 46.5% de l'ensemble. Cette catégorie regroupe toutes les ambiances à l'intérieur même des équipements objets de notre recherche. Dans les textes analysés, les auteurs y évoquent plusieurs éléments de l'architecture de l'intérieur. Ils parlent beaucoup des espaces intérieurs et du mobilier : chambres, salons, terrasses jardin intérieur, corridor, salle de jeux, salle de lecture, théâtre, bains, sources, bassins, piscines, baignoires, décorations, ameublement, aménagement intérieur, dimension, diamètre, etc. Un des exemples les plus marquants est le récit de M. de Lage évoquant l'hôtel du Sahara à Biskra, car il nous fait découvrir les ambiances dans sa chambre: «*Minuit sonne quand nous arrivons à Biskra la chaleur est étouffante! Ce serait croire qu'on a bassiné mon lit à l'hôtel du Sahara*» (Collectif, 1895: 145). Effectivement, le terme 'bassiné' évoque un signal 'thermique' qui renvoi au mobilier 'lit' qui fait partie de la composante architecturale qui est la 'chambre de l'hôtel' (Figure 7). L'ouvrage relate une arrivée tardive à Biskra, où la chaleur est qualifiée d'étouffante dès minuit. L'hôtel du Sahara est mentionné comme le lieu où on a du mal à trouver le sommeil, malgré la fatigue d'une journée de voyage. La chambre est caractérisée par sa simplicité, avec une vue sur la grande plaine grise devant la fenêtre. La sensation des 'terribles espaces' renforce l'isolement et l'immensité du désert environnant.

Figure 7: Une nuit chaude à l'hôtel du Sahara. Source: Auteurs, 2024.

Dans une autre citation de Trumet De Fontrace, il raconte qu'il a vu deux gazelles dans la cour de l'hôtel du Sahara «*Vendredi 15 et samedi 16. – Il y a à l'hôtel du Sahara, dans une petite cour séparée deux jolies gazelles. Je désire en prendre la silhouette, c'est un animal si gracieux! Obligeamment Mme Chabert les fait passer dans la cour principale, au grand soleil et je les croque suivant le dessin ci-après. L'une d'elles saute au moment même où je presse le bouton*» (Trumet De Fontrace, 1896: 347) (Fig.8). D'après les textes, l'hôtel du Sahara est décrit comme une 'maison propre, bien tenue', éloignant les chambres du bruit extérieur pour garantir la fraîcheur. L'auteur loue également l'accueil par Chabert, un ancien officier, soulignant une atmosphère tranquille et favorable.

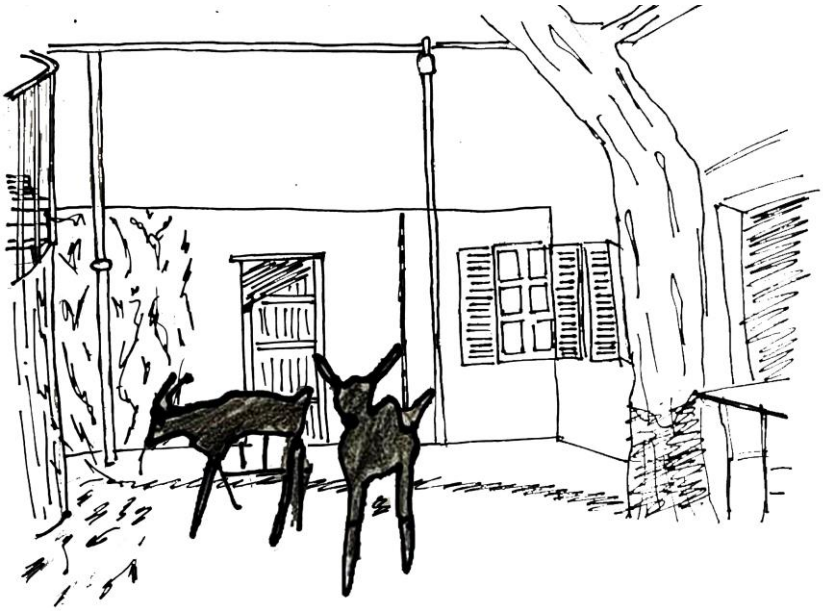


Figure 8: Deux gazelles dans la cour principale de l'hôtel du Sahara.
Source: Auteurs, 2024.

La deuxième place est occupée par la catégorie 'Édifice', où nous comptons un taux d'occurrence de 135 ambiances (34.7%). Rappelons que dans cette catégorie, nous parlons bien de la bâtisse de l'hôtel en soi, en l'occurrence son volume et les éléments architectoniques visibles sur ses façades. Les textes étudiés semblent indiquer plusieurs éléments en relation avec l'architecture dont: style, arcades, fenêtres, entrées principales, ornementations, couleurs, fenêtres, arcades, galeries, minarets, dôme, etc. Ils évoquent aussi les matériaux: brique de terre crue, maçonnerie, tuiles, chaux, etc. Puis, nous remarquons aussi certains éléments qui soulignent l'organisation spatiale de l'édifice et aussi sa volumétrie (nombre d'étages, dimensions des murs épais, forme des toits, dimensions, etc). Tel est le cas par exemple du livre «*Souvenirs d'Afrique. Algérie, Tunisie*», un journal de voyage publié en 1896 et soigneusement rédigé par Armand Trumet de Fontarce. Il décrit le voyage de ce dernier en Tunisie et en Algérie. Son passage en Algérie

l'a amené à Biskra, une ville déjà très réputée pour son cachet touristique à l'époque. L'auteur est aussi un amateur de photographie qui nous expose son shooting devant un mur de l'hôtel Royal: «*Reculer et prendre un nouveau rendez-vous ne me paraît pas sage; j'avise tout près de là le mur très blanc du pignon de l'hôtel Royal. Je fais placer là les cinq sujets qui se sont présentés et j'opère pour le mieux, c'est le cas de le dire!*». (Trumet De Fontrace, 1896: 352), (Fig.9).

Figure 9: Femmes en train de poser devant le mur blanc de l'hôtel Royal.
Source: Auteurs, 2024.

Ainsi, malgré le taux d'occurrence dans cette catégorie qui demeure plus faible que celui de la catégorie précédente 'Espace intérieur', il est possible de la diviser en quatre sous-catégories, à savoir: style architectural, matériaux de construction, orientation et forme du bâtiment. Nous pouvons même ajouter le nombre d'étages qui est en relation étroite avec la volumétrie du bâtiment.

La dernière place revient à la catégorie 'Site environnant', où nous y remarquons le taux d'occurrence le plus bas avec pas plus de 73 ambiances (18.8%). Dans les ouvrages sélectionnés et analysés, les auteurs se concentrent sur plusieurs éléments qui sont regroupés dans cette catégorie: espaces extérieurs, voisinage, bâtiments voisins, bâtiments loin de la ville, situation dans la ville, portes et fenêtres dans la rue, forme de l'îlot, vues sur l'extérieur, tramway à côté de l'établissement, zone calme et zone mouvementée, etc. Le livre intitulé «*De Mogador à Biskra: Maroc & Algérie*», a été écrit par Jules Leclercq qui y parle de cet hôtel et de sa situation par rapport au fort Saint-Germain: «*Nous descendîmes à l'hôtel du Sahara, au fort Saint-Germain. A peine eûmes-nous pris possession de notre gîte, qu'un épouvantable orage accompagné d'une pluie torrentielle éclata sur cette oasis de Biskra où il pleut trois fois en dix ans*» (Leclercq, 1881-1899: 71). Un autre exemple concerne le voisinage de l'hôtel de l'Oasis décrit dans le «*Bulletin du Photo club de Constantin*e». L'auteur est fasciné par l'ambiance du voisinage, un quartier populaire de Biskra. Il y découvre une

diversité de cultures et de traditions «*A huit heures et demie du soir une musique infernale nous attire tous les dix dans les rues un peu excentriques; nous sommes dans le quartier des Ouled-Naïls; là tout remue, tout grouille: arabes, filles de joie au visage peint, biskris, européens, enfants, juifs, quelques étrangers comme nous*» (Photo club de Constantine, 1895: 47), (Fig.10). Selon l'auteur, l'hôtel de l'Oasis à Biskra est d'une 'hospitalité simple et cordiale' dont les visiteurs gardent 'le meilleur souvenir'. Les chambres, la cuisine, le service, et la propreté sont tous 'dignes d'éloges'. L'hôtel Royal, quant à lui, est décrit comme 'fort beau' et 'remarquable par ses grandes dimensions'. Il se distingue par sa 'richesse de sa salle à manger' et son 'cachet oriental', avec un 'minaret élancé' ajoutant à son caractère. Le casino, en face, est décrit comme 'superbe de proportions' et 'éclatant de blancheur', conçu comme un établissement de luxe et de plaisir, proposant des installations comme un théâtre, une salle de baccarat, et un salon de lecture orné de décors orientaux.

Figure 10: Ambiance musicale dans le quartier des Ouled-Naïls pas loin de l'hôtel de l'Oasis.
Source: Auteurs, 2024.

Parmi les diverses sous catégories relevant du 'Site environnant', nous en retenons sa situation, et son taux d'occupation du sol.

PERCEPTIONS DES ÉQUIPEMENTS TOURISTIQUES

L'analyse de contenu révèle des impressions variées des auteurs envers les équipements touristiques à Biskra, notamment les hôtels et les thermes. Les adjectifs utilisés vont de positifs à négatifs, reflétant des perceptions contrastées. Thierry-Mieg (1861) décrit l'architecture locale avec des termes tels que 'originale', 'appropriée', 'excellente', mais aussi 'informe' et 'sans goût', soulignant des jugements divers voire contrastants. Largeau (1877) relate positivement l'hôtel du Sahara en le qualifiant de 'très-confortablement tenu' et signalant ses arcades bien construites. Bourde (1880) mentionne des constructions locales adaptées au climat, décrites de manière critique mais respectueuse. Régis (1880) décrit les chambres de l'hôtel de madame Medan avec des adjectifs comme 'bonnes', 'simples', 'propres' et un environnement 'paisible'.

Les descriptions des hôtels varient également en termes d'attraction ou de répulsion. Tchikhatchev (1880) parle de l'hôtel du Sahara comme 'agréable' mais

‘trop restreint’. Lubomirski (1880) trouve l’hôtel Medan ‘peu luxueux’ mais un ‘soulagement’ dans la région. Bourquelot (1881) décrit l’hôtel Victoria comme ‘simple’ mais avec un extérieur attrayant. Benoist (1886) flatte l’hôtel du Sahara pour sa gestion et son atmosphère conviviale. Enfin, Verhaeghe De Naeyer (1888) complimente les caractéristiques pratiques de l’hôtel du Sahara adaptées au climat désertique, le rendant attirant.

Les équipements touristiques, selon certains textes, sont globalement perçus de manière positive, avec des termes comme ‘salubre’, ‘tonique’, ‘charmant’ (Frechon, 1892) et des descriptions de développements modernes comme le casino et les thermes utilisant des eaux ‘sulfureuses’ et ‘chaudes’. D’autres auteurs, comme Charles (1897-1898), expriment des critiques, comparant l’hôtel du Sahara à des caravansérails et mentionnant des conditions difficiles. Gautier (1897) décrit les hôtels et les thermes comme ‘superbes’, ‘luxueusement aménagés’ et ‘confortablement meublés’, reflétant une impression très positive.

Dans les textes analysés, plusieurs styles d’équipements touristiques à Biskra se démarquent, chacun suscitant des impressions variées chez les auteurs. Selon une étude antérieure (Dali, Belakehal, 2023), dans le damier colonial de Biskra deux styles sont principalement identifiés tout en présentant plusieurs variantes pour chacun d’eux. Premièrement, sont identifiés les bâtiments conçus dans le respect du style du ‘Vainqueur’, comme l’hôtel du Sahara, l’hôtel Victoria et l’hôtel Terminus. L’hôtel de l’Oasis en fait aussi partie. À l’inverse, le style du ‘Protecteur’ concerne le casino et son hôtel (Dar-Diaf), l’hôtel Transatlantique et Hammam-Es-Salahin. L’hôtel Royal est affilié aussi à ce même style.

L’hôtel du Sahara est souvent complimenté pour son adaptation au climat désertique. Il est narré par des ‘fenêtres étroites’ et des ‘murs épais’, des caractéristiques architecturales jugées pratiques pour gérer la chaleur intense de la région. Verhaeghe De Naeyer (1888) souligne l’utilité de ces éléments pour assurer un confort thermique optimal. De même, Tchikhatchev (1880) apprécie la cour intérieure de l’hôtel, qualifié par des adjectifs comme ‘agréable’ et ‘pittoresque’, offrant un espace ombragé et rafraîchissant grâce à un toit en treillage garni de vignes et de palmiers. Ce style est donc perçu positivement pour sa fonctionnalité et son adaptation au contexte climatique local.

En revanche, des observations négatives sont également émises sur des établissements comme le casino et son hôtel (Dar-Diaf), l’hôtel Transatlantique, et Hammam-Es-Salahin pour leur luxe parfois excessif. Dans l’ensemble, les impressions des auteurs varient en fonction des styles architecturaux et des équipements offerts. Les hôtels et les thermes qui réussissent à s’adapter au climat et à offrir un confort modeste mais efficace, comme l’hôtel du Sahara et l’hôtel Victoria, reçoivent généralement des critiques positives pour leur fonctionnalité et leur atmosphère accueillante malgré leur simplicité. En revanche, les établissements plus luxueux, comme l’hôtel Royal, le casino et son hôtel (Dar-Diaf), suscitent des opinions mitigées, vantant parfois leur grandeur, mais dépréciant parfois leur niveau de confort par rapport aux attentes européennes de l’époque.

CONCLUSION

L'utilisation des sources écrites pour l'étude, l'analyse et la restitution des ambiances architecturales patrimoniales des équipements touristiques hôteliers et thermales dans la ville de Biskra représente l'essence même de cet article. L'objectif de ce dernier est d'identifier les indicateurs restituant la relation sensorielle de l'usager avec son espace vécu, et dont les résultats sont très favorables.

Effectivement, l'analyse de contenu de trente-sept (37) écrits de natures différentes qu'ils soient scientifiques ou littéraires, et d'auteurs ayant vécus dans les espaces patrimoniales, nous informe peu sur les pratiques corporelles des baigneurs dans le Hammam, et sur la vie quotidienne des touristes dans les hôtels. Cependant, ils nous dévoilent un grand nombre d'ambiances caractérisant ces équipements touristiques à Biskra. Ces ambiances sont visuelles, thermiques, lumineuses, sonores puis olfactives et enfin tactiles. D'autre part, cette étude a mis en exergue les hôtels et les thermes de Biskra les plus connus à l'époque et les éléments de l'architecture générateurs de ces ambiances.

Les sentiments des auteurs envers les équipements touristiques de Biskra, durant la période coloniale, sont mixtes et exprimées au moyen d'adjectifs reflétant des jugements positifs et négatifs, et des descriptions qui varient entre attraction et répulsion. De prime abord, cette diversité se révèle être clairement liée aux caractéristiques urbanistiques et architecturales ainsi que les commodités offertes par ces édifices. Toutefois, les aboutissements de l'analyse de contenu des récits de voyage laissent entendre certaines associations avec l'origine et le rang social des touristes eux-mêmes, en l'occurrence Français et Britanniques de même que Riches et Classe moyenne ou bien Intellectuel et Mondain.

Ces références historiques peuvent servir de sources d'inspiration précieuse pour les architectes contemporains. En adaptant les éléments d'ambiance qui évoquent le confort et le sentiment de bien-être, les projets touristiques pourraient saisir l'essence de l'hospitalité et de l'adaptation au climat qui étaient au cœur des établissements historiques à Biskra, offrant ainsi aux visiteurs une immersion unique dans l'histoire et le paysage culturel de la région.

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BIBLIOGRAPHIE

Adolphe, l. *et al*. 1998. *Les cahiers de la recherche architecturale*, in: ambiances architecturales et urbaines. Marseille: Parenthèses.

Amphoux, P. *et al*. 1998. *La notion d'ambiance: une mutation de la pensée urbaine et de la pratique architecturale*. Paris: Ministère de l'Équipement, des Transports et du Logement.

Amphoux, P., Thibaud J-P., Chelkoff G. 2004. *Ambiances en débats*. Bernin: A la Croisée.

Bardin, L. 1977. *L'analyse de contenu*. Paris: Presses universitaires de France.

Belakehal, A. 2007. *Étude des aspects qualitatifs de l'éclairage naturel dans les espaces Architecturaux*. Cas des milieux arides à climat chaud et sec. Thèse de Doctorat, Biskra, Université de Biskra.

Belakehal, A. 2012 Ambiances patrimoniales. Problèmes et méthodes. *International Congress on Ambiances, Ambiances in action / Ambiances en acte(s)*: 505–510, https://hal.science/halshs-00745537/. Consulté le 10/03/2023.

Belakehal, A., Farhi, A. 2008. Les ambiances environnementales de la medina : Le patrimoine oublié. *Actes de la conférence internationale, la Médina: un Tissu Urbain à Sauvegarder*: 77-84, https://www.researchgate.net/publication/264782441_Les_ambiances_environnementales_de_la_medina_Le_patrimoine_oublie. Consulté le 10/03/2023.

Ben Hadj Salem, M. 2009. *Les effets sensibles comme outils d'analyse et d'aide à la conception dans les gares du XIX^{e} siècle*. Thèse de doctorat, ENSAG,Grenoble.

Berelson, B. 1952. *Content Analysis in Communication Research*. Michigan: The Free Press.

Berman, R. 2006. *Assessing Urban Design: Historical Ambience on the Waterfront*. Lanham: Lexington Books.

Chtara, C., Ben Hadj Salem, M., Belakehal, A. 2016. *La mémoire ambiantale de l'espace sonore des Souks de la médina de Tunis à travers les textes du XIX^{e} siècle: Tentative de rétrospective ambiantale*. Ambiances, tomorrow. *Proceedings of 3rd International Congress on Ambiances*: 885-890, https://hal.science/hal-01414061v1/document. Consulté le 10/03/2023.

Dali, A. I., Belakehal, A. 2019. Style architectural des monuments de l'époque coloniale: cas de l'hôtel du Sahara à Biskra, Algérie. *Conservation et mise en valeur du patrimoine architectural et paysagé des sites côtiers méditerranéens*: 1343–1354, https://ojs.francoangeli.it/_omp/index.php/oa/catalog/book/437. Consulté le 10/03/2023.

Dali, A. I., Belakehal, A. 2023. Hotel Architecture in the French Colonization Era: The Case of Biskra City, Algeria. *Proctor:* 154–167, *https://hrcak.srce.hr/ojs/index.php/prostor/article/view/27017*. Consulté le 15/06/2024.

Duchesneau, M. 2014. Gallica: the Online Digital Library of the Bibliothèque nationale de France. *Nineteenth-Century Music Review 11*: 337–347.

Fraser, J. 1911. F. *The land of veiled women: some wanderings in Algeria, Tunisia and Morocco*. Londres: Cassell and company.

Ghiglione, R. *et al*. 1980. *Manuel d'analyse de contenu*. Armand Colin, Paris, 159p.

Hadjer, D., Belakehal, A. 2022. Les ambiances patrimoniales à l'épreuve de l'appropriation: cas de la casbah d'Alger. *Bulletin de la Société Géographique de Liège* 79: 285–308, https://popups.uliege.be/0770-7576/index.php?id=7009&file=1. Consulté le 10/03/2023.

Holsti, O. R. 1965. *Content Analysis. The Handbook of Social Psychology*. California: Stanford University.

Joanne, P. 2003. *L'espace sensible du monastère cistercien aux origines : essai de caractérisation des ambiances architecturales*. Thèse de doctorat, Nantes, ENSAN.

Kowaltowski, D. *et al*. 2003. Images of a 'Traditional House' in Brazilian Literature. *PLEA 2003: The 20th Conferences on passive and Low Energy Architecture,* https://www.academia.edu/1293393/Images_of_a_Traditional_Housein_Brazilian_Literature. Consulté le 10/03/2023.

Lemaire, N. 2010. *Claudius Madrolle et l'introduction du tourisme colonial en Indochine française 1898–1914: entre propagande économique et légitimation politique*. Mémoire de Maîtrise, Montréal, Université du Québec.

Lassance, G. 1998. *Analyse du Rôle des Références dans la Conception: Eléments pour une Dynamique des Représentations du Projet d'Ambiance Lumineuse en Architecture*. Thèse de Doctorat, Nantes, ENSAN.

Lasswell, H. D., Leites, N. 1965. *Language of politics: Studies in Quantitative Semantics*. Cambridge: MIT Press.

Mahroug, E.&Belakehal, E. 2016. The evolution of heritage atmospheres in the medina of Tunis since the 19th century. *Proceedings of the 1 International Conferences on Islamic Heritage Architecture and Art*: 161–169.

Mucchielli, R. 1974. *L'analyse de contenu des documents et des communications*. Paris: ESF.

Mucchielli R. 1996. *L'interview de groupe*. Montrouge: ESF Editeur.

Quivy, R., Campenhoudt, L. V. 1997. *Manuel de recherche en sciences sociales*. Paris: Dunod.

Stojanović K., Đenadić M. 2019. Hotel architecture and ambience as an answer to the contemporary challenges of tourism. *Tourism International Scientific Conference Vrnjačka Banja – TISC*. 4: 395–413, http://www.tisc.rs/proceedings/index.php/hitmc/article/view/263. Consulté le 10/03/2023.

Zytnicki C. 2013. *Faire l'Algérie agréable. Tourisme et colonisation en Algérie des années 1870 à 1962*. Le Mouvement Social 242: https://www.cairn.info/revue-le-mouvement-social-2013-1-page-97.htm. Consulté le 10/03/2023.

Zidelmal-Remas, N., Belakehal A. 2016. Les ambiances de la Casbah d'Alger. Les révélations des textes. Ambiances, tomorrow. *International Congress on Ambiances, Ambiances in action / Ambiances en acte(s)*: 993-998, https://hal.archives-ouvertes.fr/hal-01414021/document. Consulté le 10/03/2023.

Zidelmal-Remas, N., Belakehal A. 2016, Le roman comme source pour les recherches en patrimoine architectural. L'exemple des ambiances des maisons traditionnelles kabyles. *Corpus de textes: composer, mesurer, interpréter*: 99-110, https://doi.org/10.4000/books.enseditions.7356

Zytnicki C., Kazdaghli H. 2009. *Le tourisme dans l'empire français. Politiques, pratiques et imaginaires (XIX^{e}-XX^{e} siècles)*. Paris : Société française d'histoire des outre-mer.

SOURCES

Commandant, A.A. 1908. *Un mois de soleil*. Paris: Berger-Levrault, https://catalogue.bnf.fr/ark:/12148/cb341358364. Consulté le 20/03/2023.

Baraudon, A. 1893. *Algérie et Tunisie: récits de voyage et études*. Paris: E. Plon, Nourrit, http://catalogue.bnf.fr/ark:/12148/cb34135394x. Consulté le 20/03/2023.

Benoist, G. 1886. *De l'instruction et de l'éducation des indigènes dans la province de Constantine*. Paris: Hachette, http://catalogue.bnf.fr/ark:/12148/cb300840469. Consulté le 20/03/2023.

Bernard, M. 1894-1902. *Autour de la Méditerranée, les côtes barbaresques, de Tunis à Alger*. Paris: Librairie Renouard, http://catalogue.bnf.fr/ark:/12148/cb30091015h. Consulté le 20/03/2023.

Bourde, P. 1880. *A travers l'Algérie: souvenirs de l'excursion parlementaire (septembre-octobre 1879)*. Paris: G. Charpentier, http://catalogue.bnf.fr/ark:/12148/cb34134937h. Consulté le 20/03/2023.

Bourquelot, É. 1881. *En Algérie souvenirs d'un Provinois.* Paris: G. Chamerot, https://catalogue.bnf.fr/ark:/12148/cb341349783. Consulté le 20/03/2023.

Carteron, C. 1866. *Voulez-vous connaître l'Algérie, tous les usages des Arabes, leur vie intime et extérieure, ainsi que celle des Européens dans cette colonie*. Mâcon: Imprimerie de Romand, https://catalogue.bnf.fr/ark:/12148/cb30201120v. Consulté le 20/03/2023.

Cat, É. 1892. *A travers le désert*. Paris: Librairie Gedalge, http://catalogue.bnf.fr/ark:/12148/cb302058542. Consulté le 20/03/2023.

Chanzy A-E-A., *et al*. 1922. *Exposé de la situation de l'Algérie*. Alger: Imprimerie administrative Gojosso et Cie, https://catalogue.bnf.fr/ark:/12148/cb32772141n. Consulté le 20/03/2023.

Charles, F. 1897–1898. *Mes souvenirs*. Paris: E. Plon, Nourrit, http://catalogue.bnf.fr/ark:/12148/cb392533356. Consulté le 20/03/2023.

Collectif. 1895. *A travers le monde*. Paris: Hachette, http://catalogue.bnf.fr/ark:/12148/cb326804969. Consulté le 20/03/2023.

De Claparède, A. 1896. *En Algérie*. Genève: Ch. Eggimann & Cie, http://catalogue.bnf.fr/ark:/12148/cb34135484w. Consulté le 20/03/2023.

De Waleffe, M. 1927. *Paris-midi: seul journal quotidien paraissant à midi*. Paris: s.n., https://catalogue.bnf.fr/ark:/12148/cb32832672n. Consulté le 20/03/2023.

Duveyrier, H. 1905. *Sahara algérien et tunisien. Journal de route*. Paris: A. Challamel, http://catalogue.bnf.fr/ark:/12148/cb341357612. Consulté le 20/03/2023.

Frechon, É. 1892. *Biskra*. Alger: Gervais-Courtellemont.

Gautier, É. 1897.*La Science française: revue populaire illustrée*. Paris: Rédaction et administration, http://catalogue.bnf.fr/ark:/12148/cb328659030. Consulté le 20/03/2023.

Grison-Poncelet, J. 1898. *Voyages d'un Picard, par un membre de l'Association française pour l'avancement des sciences: à propos des congrès de Marseille, Pau, Besançon, Caen, Bordeaux, Carthage...*. Creil: Imprimerie de C. Vermont, https://catalogue.bnf.fr/ark:/12148/cb30543671z. Consulté le 20/03/2023.

Hanriot, M. 1911. *Gouvernement général de l'Algérie. Les Eaux minérales de l'Algérie*. Paris: H. dunod& E. Pinat, http://catalogue.bnf.fr/ark:/12148/cb305747775. Consulté le 20/03/2023.

Hautfort, F. 1897. *Au Pays des palmes. Biskra*. Paris: P. Ollendorff, https://catalogue.bnf.fr/ark:/12148/cb341355725. Consulté le 20/03/2023.

Hurabielle, J. (Abbé). 1899. *Au Pays du bleu. Biskra et les oasis environnantes*. Paris: A. Challamel, https://catalogue.bnf.fr/ark:/12148/cb34135544x. Consulté le 20/03/2023.

Lallemand, C. 1893. *Vingt jours en Tunisie, retour en France par Biskra et Constantine*. Paris: May &Motteroz, http://catalogue.bnf.fr/ark:/12148/cb307231093. Consulté le 20/03/2023.

Largeau, V. 1877. *Le Sahara, premier voyage d'exploration*. Paris: Sandoz &Fischbacher.

Leclercq, J. 1881–1899. *De Mogador à Biskra: Maroc & Algérie*. Paris: Challamelaîné, https://catalogue.bnf.fr/ark:/12148/cb30766441z. Consulté le 20/03/2023.

Leroy, A-L. 1909. *Nos fils et nos filles en voyage*. Paris: Vuibert& Nony, http://catalogue.bnf.fr/ark:/12148/cb30798753w. Consulté le 20/03/2023.

Louis, P. 1898. *Algérie et Tunisie*. Hachette & Cie, Paris, 419p. [en ligne]. Disponible sur: http://catalogue.bnf.fr/ark:/12148/cb311099846. Consulté le 20/03/2023.

Lubomirski J. 1880. *La côte barbaresque et le Sahara : excursion dans le vieux monde: les pays oubliés*. Paris: Dentu, http://catalogue.bnf.fr/ark:/12148/cb30841522h. Consulté le 20/03/2023.

Mallebay E. 1892. *Guide pratique de Biskra et de ses environs*. Batna: Amand Beun, http://catalogue.bnf.fr/ark:/12148/cb34135363n. Consulté le 20/03/2023.

Photo club de Constantine. 1895. *Bulletin du Photo-club de Constantine*. Constantine: Imprimerie lypo-litho L. Poulet, http://catalogue.bnf.fr/ark:/12148/cb327277346. Consulté le 20/03/2023.

Porcheron, L. (s.d). *Guide pratique aux villes d'eaux. Stations climatiques. Plages marines françaises*. Marseille: Quo Vadis, http://catalogue.bnf.fr/ark:/12148/cb31137156w. Consulté le 20/03/2023.

Reclus, O. 1902. *À la France: sites et monuments. Algérie (Alger, Constantine, Oran)*. Paris: Touring-club de France, http://catalogue.bnf.fr/ark:/12148/cb31185614w. Consulté le 20/03/2023.

Régis, L. 1880. *Constantine voyages et séjours*. Paris: Calmann Lévy, http://catalogue.bnf.fr/ark:/12148/cb34134944s. Consulté le 20/03/2023.

Société de géographie. 1866. *Le Globe. Journal géographique. Organe 'puis' Bulletin de la Société de géographie de Genève pour ses Mémoires et bulletin....* Genève: [s.n.], http://catalogue.bnf.fr/ark:/12148/cb32782832t. Consulté le 20/03/2023.

Tchikhatchev, P. A. 1880. *Espagne, Algérie et Tunisie, lettres à Michel Chevalier, J.-B.* Paris: Baillière, https://catalogue.bnf.fr/ark:/12148/cb314393553. Consulté le 20/03/2023.

Thierry-Mieg C. 1861. *Six semaines en Afrique: souvenirs de voyage*. Paris: Michel-Lévy frères, https://catalogue.bnf.fr/ark:/12148/cb314567896. Consulté le 20/03/2023.

Trumet De Fontrace, A. 1896. *Souvenirs d'Afrique. Algérie, Tunisie. Mission officielle, journal de voyage*. Bar-sur-Seine: Vve C. Saillard, http://catalogue.bnf.fr/ark:/12148/cb34135483j. Consulté le 20/03/2023.

Verhaeghe De Naeyer, L. 1888. *Vingt ans d'étapes*. Bruxelles: C. Muquardt, https://catalogue.bnf.fr/ark:/12148/cb31560049z. Consulté le 20/03/2023.

Zaccone, J. 1865. *De Batna à Tuggurt et au Souf. J*. Paris: Dumaine, http://catalogue.bnf.fr/ark:/12148/cb316787287. Consulté le 20/03/2023.

ANNEXE 1: PRÉSENTATION DU CORPUS

Table 4.
Corpus d'ouvrages analysé. Source: Auteur 2023

Ouvrage	Titre	Auteur(s)	Ville: Maison d'édition	Année de pub.	Nature	Réf
1er	Six semaines en Afrique: souvenirs de voyage	THIERRY-MIEG Charles	Paris: Michel-Lévy frères	1861	Monographie	A
2eme	De Batna à Tuggurt et au Souf	ZACCONE Joseph	Paris, J. Dumaine	1865	Monographie	A.A
3eme	Le Globe. Journal géographique	SOCIÉTÉ DE GÉOGRAPHIE	Genève: [s.n.],	1866	Journal	A.E
4eme	Voulez-vous connaître l'Algérie	CARTERON Charles	Mâcon: imprimerie de Romand	1866	Monographie	B
5eme	Le Sahara, premier voyage d'exploration	LARGEAU Victor	Paris: Sandoz &Fischbacher	1877	Monographie	C
6eme	A travers l'Algérie: souvenirs de l'excursion parlementaire (septembre-octobre 1879)	BOURDE Paul	Paris: G. Charpentier	1880	Monographie	D
7eme	Constantine voyages et séjours	RÉGIS Louis	Paris: Calmann Lévy	1880	Monographie	E
8eme	Espagne, Algérie et Tunisie, lettres à Michel Chevalier	TCHIKHATCHEV Petr Aleksandrovitch	Paris, J.-B. Baillière	1880	Monographie	F
9eme	La côte barbaresque et le Sahara: excursion dans le vieux monde: les pays oubliés	LUBOMIRSKI Józef	Paris, Dentu	1880	Monographie	F.A
10eme	De Mogador à Biskra: Maroc & Algérie	LECLERCQ Jules	Paris, Challamelaîné	1881-1889	Monographie	F.E
11eme	En Algérie souvenirs d'un Provinois	BOURQUELOT Émile	Paris, G. Chamerot	1881	Monographie	G
12eme	De l'instruction et de l'éducation des indigènes dans la province de Constantine	BENOIST Gustave	Paris, Hachette	1886	Monographie	G.A
13eme	Vingtansd'étapes	VERHAEGHE DE NAEYER Léon	Bruxelles, C. Muquardt	1888	Monographie	G.E
14eme	. A travers le désert	CAT Édouard	Paris: Librairie Gedalge	1892	Monographie	I.A
15eme	Guide pratique de Biskra et de ses environs	MALLEBAY Emmanuel	Banta: Amand Beun	1892	Guide touristique	J

Ouvrage	Titre	Auteur(s)	Ville: Maison d'édition	Année de pub.	Nature	Réf
16eme	Biskra	FRECHON Émile	Alger: Gervais-Courtellemont	1892	Monographie	J.A
17eme	Vingt jours en Tunisie, retour en France par Biskra et Constantine	LALLEMAND Charles	Paris: May &Motteroz	1893	Monographie	J.E
28eme	Algérie et Tunisie: récits de voyage et études	BARAUDON Alfred	Paris, E. Plon, Nourrit	1893	Monographie	K
19eme	Autour de la Méditerranée, les côtes barbaresques, de Tunis à Alger	BERNARD Marius	Paris: Librairie Renouard	1894-1902	Monographie	K.A
20eme	Bulletin du Photo-club de Constantine	PHOTO CLUB DE CONSTANTINE	Constantine: Imprimerie lypo-litho L. Poulet	1895	Journal mensuelle	M
21eme	A travers le monde	COLLECTIF	Paris: Hachette	1895	Monographie	M.A
22eme	En Algérie	DE CLAPARÈDE Arthur	Geneve: Ch. Eggimann & Cie	1896	Monographie	N
23eme	Souvenirs d'Afrique. Algérie, Tunisie	TRUMET DE FONTRACE Armand	Bar-sur-Seine: Vve C. Saillard	1896	Monographie	P
24eme	La Science française: revue populaire illustrée	GAUTIER Émile	Paris: Rédaction et administration	1897	Revue mensuelle	Q
25eme	Mes souvenirs	CHARLES François	Paris: E. Plon, Nourrit	1897-1898	Monographie	Q.A
26eme	Au Pays des palmes. Biskra	HAUTFORT Félix	Paris: P. Ollendorff	1897	Monographie	R
27eme	Algérie et Tunisie	LOUIS Piesse	Paris: Hachette & Cie	1898	Monographie	S
28eme	Voyages d'un Picard	GRISON-PONCELET.J	Creil: imprimerie de C. Vermont	1898	Monographie	T
29eme	Au Pays du bleu. Biskra et les oasis environnantes	HURABIELLE Jean (Abbé)	Paris: A. Challamel	1899	Monographie	U
30me	À la France: sites et monuments. Algérie	RECLUS Onésime	Paris: Touring-club de France	1902	Guide touristique	V
31eme	Sahara algérien et tunisien. Journal de route	DUVEYRIER Henri	Paris: A. Challamel	1905	Monographie	V.A
32eme	Un mois de soleil	A.A COMMANDANT	Paris, Berger-Levrault	1908	Monographie	V.E
33eme	Nos fils et nos filles en voyage	LEROY Adolphe-Louis	Paris: Vuibert& Nony	1909	Monographie	X
34eme	Gouvernement général de l'Algérie. Les Eaux minérales	HANRIOT Maurice	Paris: h. dunod& E. Pinat	1911	Monographie	X.A

Ouvrage	Titre	Auteur(s)	Ville: Maison d'édition	Année de pub.	Nature	Réf
	de l'Algérie					
35eme	Exposé de la situation de l'Algérie	CHANZY Antoine-Eugène-Alfred *et al*	Alger : Imprimerie administrative Gojosso et Cie	1922	Monographie	Y.A
36eme	Paris-midi: seul journal quotidien paraissant à midi	MAURICE de Waleffe	Paris: [s.n.]	1927	Journal	Y.O
37eme	Guide pratique aux villes d'eaux. Stations climatiques. Plages marines françaises	PORCHERON Louis	Marseille: Quo Vadis	[s.d.]	Monographie	ZE

ANNEXE 2: EXEMPLE ANALYSE DU 1ER OUVRAGE: SIX SEMAINES EN AFRIQUE

LES UNITÉSD'ENREGISTREMENT (UE)

Table 5.

Les unités d'enregistrement (UE) de «Six semaines en Afrique». Source: Auteur 2023

Ref	Page	Texte
A.1	233	Nous sommes descendus à l'hôtel du Sahara, grand bâtiment à rez-de-chaussée, avec cour intérieure et terrasse. Dans ce rez-de-chaussée se trouvent la cuisine, la salle à manger et quelques autres pièces. Un escalier mène de la cour à la terrasse, au milieu de laquelle on a bâti comme une petite maison en bois, avec deux chambres. C'est là qu'on nous a logés. On y respirait un peu d'air, quoique la chaleur fût étouffante.
A.2	233	L'hôtel du Sahara fait partie d'un ensemble de bâtiments qui décorent la place principale de la ville française de Biskra. Cette place n'est pas encore achevée on y plante une allée d'arbres pour donner de l'ombre
A.3	233	Le fort Saint-Germain occupe l'un de ses côtés, le jardin d'acclimatation le second ; en face se trouve le cercle des officiers; enfin, le quatrième côté est garni par une ligne de maisons toutes semblables, et parmi celles-ci notre hôtel. Toutes ces constructions se distinguent par une architecture à part, originale, appropriée au pays, et qui me paraît appelée à un grand avenir
A.4	233	On étouffe dans une ville ainsi construite, car le soleil et la poussière pénètrent partout
A.5	234	A Biskra on a mieux fait. On a pris la maison mauresque, construction informe ordinairement, sans goût et sans symétrie, et on a gardé ses traits principaux. On y a joint de nouvelles dispositions et le goût français, et l'on a obtenu le système d'architecture que le génie militaire a inauguré à Biskra, et qui se rapproche des constructions européennes dans les Indes et sous les tropiques
A.6	234	Toutes les maisons de la place, ainsi que le cercle des officiers, sont à rez-de-chaussée, avec des arcades comme dans la rue de Rivoli, des terrasses au lieu de toits, et en général des cours intérieures sur lesquelles s'ouvrent les fenêtres.
A.7	234	Les murs sont faits en pisé ou briques séchées au soleil, suivant la méthode arabe, et crépis à la chaux, ce qui les rend très-solides. On conçoit qu'une place ainsi garnie soit à la fois élégante et monumentale.
A.8	239	A Biskra déjà le climat est funeste a beaucoup d'Européens. La température ordinaire, du 15 juin au 15 octobre, est de 50 degrés à midi, ou même davantage, de 40 degrés le soir, de 30 à 35 la nuit. Les chiens n'osent y sortir en plein midi, et les bougies fondent à l'ombre. Enfin, l'eaufraîche y est inconnue.

ANALYSE DES CITATIONS

Table 6.
Analyse des citations de «Six semaines en Afrique». Source: Auteur 2023

Citation (UE)	Page	Canal sensoriel	Ambiances (contenus)		Composition et architecture	Bâtiment touristique
			Manifeste	Latent		
A.1	233	- La vision. - Le touché.	- Visuelle (organisation spatiale de l'hôtel). - Visuelle (les matériaux de construction). - Aéraulique (l'air respiré dans la chambre). - Thermique (la chaleur ressentie dans la chambre).		- Cour intérieure, terrasse, cuisine, salle à manger, quelques autres pièces, escalier, chambres. - Les deux chambres de l'hôtel - La chambre.	Hôtel du Sahara.
A.2	233	- La vision. - L'ouïe.	- Lumineuse (ombre dans l'allée d'arbres).	- Sonore (bruit du vent dans les arbres).	- Le voisinage de l'hôtel.	Hôtel du Sahara.
A.3	233	- La vision.	- Visuelle (bâtiments qui entourent l'hôtel et l'architecture de l'ensemble).		- Le voisinage de l'hôtel.	Hôtel du Sahara.
A.4	234	- Le touché.	- Lumineuse (soleil qui pénètre partout). - Aéraulique (l'air respiré et la poussière).	- Thermique (la chaleur du soleil).	- L'hôtel et son voisinage.	Tous les bâtiments de la ville.
A.5	234	- La vision.	- Visuelle (le style architectural des constructions dans la ville).		- L'hôtel et son voisinage.	Tous les bâtiments de la ville.
A.6	234	- La vision.	- Visuelle (l'architecture et ses éléments).		- Constitution de l'hôtel et son voisinage: bâtiments à RDC, arcades, terrasses, cours intérieurs.	Hôtel du Sahara.
A.7	234	- La vision.	- Visuelle (constructions ave le pisé et l'adobe, crépis avec un enduit à base de chaux).	Visuelle (couleur de la chaux utilisé à Biskra est blanche, et la terre est marron.)	- L'hôtel et son voisinage.	Tous les bâtiments de la ville.
A.8	239	- Le touché.	- Thermique (la chaleurressentie).	- Thermique (Bougie qui fondent et eau fraiche inexistante).	- L'hôtel et son voisinage.	Tous les bâtiments de la ville.

CLASSEMENT DES UE ET QUANTIFICATION

Table 7.
Classement des UE et quantification de de «*Six semaines en Afrique*». Source: Auteur 2023

Catégorie	**Unité**	**Les ambiances perçus dans l'ouvrage**												**Total**
		Visuelle		Thermique		Lumineuse		Sonore		Olfactive		Tactile		
Forme		CM	CL	CM	CL	CM	CL	CM	CL	CM	CL	CM	CL	
Voisinage du bâtiment	A.2					1			1					
	A.3	1												
	A.4				1	1						1		
	A.5	1												
	A.6	1												
	A.7	1	1											
	A.8			1	1									
	Total	4	1	1	2	2			1			1		12
Bâtiment	A.1	1												
	Total	1												1
Intérieur	A.1	1		1								1		
	Total	1		1								1		3
Total		6	1	2	2	2			1			2		16
		7=43.75%		4=25%		2=12.5%		1=6.25%		0=0%		2=12.5%		

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DENTAL ANTHROPOLOGY ON TWO SKELETONS OF EARLY BRONZE AGE FROM CONGAZ (GAGAUZIA AUTONOMOUS TERRITORIAL UNIT, REPUBLIC OF MOLDOVA): DENTAL WEAR AND NON-METRIC TRAITS

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The morphological description of the permanent dentition belonging to two skeletons of Early Bronze Age (Jivotilovka Culture) from Congaz, (Găgăuzia Autonomous Territorial Unit, Republic of Moldova) is realized in this article. The work is focused on the nonmetric traits according to the ASUDAS scoring system, and the dental wear. The occlusal wear and antemortem fractures observed in the dental material indicate the consumptions of abrasive and hard foods. Ten nonmetric dental traits were identified. Also, some characteristics of the skeletons were highlighted in this study as possible indicators of stress, such as the asymmetry in the occurrence of the traits on the antimer teeth (pattern groove of the second mandibular molar, and interruption groove of second maxillary incisor).

Keywords: dental nonmetric traits, dental wear, Early Bronze Age, Jivotilovka Culture, Găgăuzia ATU

INTRODUCTION

The evaluation of anatomical variation in bioarchaeological samples is important to understand the interactions and migrations of human populations, to determine or differentiate the geographic or biological origin of past peoples. Within bioarchaeological samples, the teeth are among the best-preserved materials due to their resistance to the action of physical and chemical factors, given by the composition of dental tissues, particularly enamel (about 96% minerals). Dental morphological traits are fundamentally under the control of genes, and they are insignificantly affected by environmental factors (Rathmann *et al*., 2017; Scott & Irish, 2013).

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Among the biological variations existing in populations, non-metric dental traits are important indicators of people diversity in human past (Ashoori *et al*., 2022). Non-metric traits of tooth crowns are phenotypic forms of enamel resulting from the process of dental morphogenesis. They can be positive (i.e., cusps) or negative structures (i.e., pits and grooves) that appear in specific positions, and present a high variability (Aguirre *et al*., 2006).

Evaluating the occurrence of dental traits, forms, and the expression degree of non- metric dental traits, the teeth became reliable indicators in sexual dimorphism (Lukacs & Kuswandari, 2022) or in estimation of age (Alanazi *et al*., 2022; Mazumder *et al*., 2023; Yang *et al*., 2023). Teeth reveal also biological relationships and evolutionary trends in the past human populations (Hubbard *et al*., 2015; Jerat *et al*., 2015; Liu *et al*., 2022; Piccirilli *et al*., 2023; Rathmann *et al*., 2023), their migrations, and comparative phenotypic patterns between human groups (Baby *et al*., 2017; Fidalgo *et al*., 2022; López-Onaindia *et al*., 2022; Maaranen *et al*., 2021).

The interrelation between the loss of dental tissues and the diet has been approached with interest for several decades in paleoanthropology (Eshed *et al*., 2006; Hernaiz-García *et al*., 2024; Hernaiz-García *et al*., 2024; Kaifu, 1999; Schmidt, 2010; Smith, 1984). Dental wear refers to the loss of dental hard tissues (i.e., enamel, dentine), and it can be categorized as masticatory wear or extra-masticatory one (Walsh, 2022). The masticatory wear usually appears on the occlusal surface of teeth, being produced by diet, including the exogenous abrasive particles within alimentary products, while also being related with food preparing techniques (Petraru *et al*., 2018; Walsh, 2022). The loss of dental tissues can be caused by different types of mechanical wear, such as abrasion and attrition, or chemical wear such as erosion (Deter, 2012; Levrini *et al*., 2014). Visible to the eye, dental macrowear represents a cumulative process that develops during the life span, and it can be used to explore diet abrasiveness (Fiorenza *et al*., 2018; Petraru & Bejenaru, 2019). Unlike dental macrowear, the dental microwear reflects the food and abrasives consumed in a short period of time (days or weeks), the two types of wear (i.e., macrowear and microwear) being the result of the same process, but in a different time lapse (Schmidt, 2010).

Despite the relative large number of published dental anthropology studies, the knowledge of dental traits and dental macrowear is still limited for the prehistoric human populations belonging to the Early Bronze Age from Eastern Europe, and even inexistent for the Jivotilovka Culture.

Jivotilovka Culutre spread in the northwest of the Black Sea and belongs to the Early Bronze Age preceading the Yamnaya Culture. The tombs of Jivotilovka Culture occupy primary positions in tumuli or secondary in mantles raised above the tombs of the Cernavoda I Culture. The Jivotilovka complexes were initially attributed to the Usatovo Culture (Субботин & Шмаглий, 1970), and later, as the number of complexes increased, they were considered a late variant of the Usatovo vestiges (Манзура, 1990), or of Bursuceni-Koisug group (Manzura *et al*., 1995), and then of Hadjider- Jivotilovka type (Яровой, 2000). Currently, however, complexes of this type are attributed, together with similar ones found

north of the Black Sea, to the Jivotilovka Culture (Ivanova, 2015; Manzura, 2016; Popovici *et al*., 2016), named so for the first time by I.F. Kovaljova in 1978 (Ковалева, 1978). Rassamakin proposed Jivotilovka-Volchansk as the most correct name, after the representative findings on the Samara and Molochnaja rivers (Rassamakin, 1996), in order to later classify the respective burial complexes in the group III, variant C of the Eneolithic burials found north of the Black Sea (Rassamakin, 2004).

More than 70 sites are currently attributed to the Jivotilovka Culture, spread between the Lower Don and the Carpathians. Their appearance in the North Pontic plain is considered a reaction to the degradation of social relations previously maintained by the Usatovo elites in the Northwestern Pontic region and Maikop ones in the Caucasus (Manzura, 2016). It seems that these tombs belong to a population of shepherds, whose archaeological artefacts are different from those they stratigraphically succeeded or preceded in the studied tumuli discovered in the North Pontic plain (Popovici, 2020).

Given the importance of non-metric traits in the description of human groups, this study aims the dentition evaluation in two skeletons belonging to Jivotilovka Culture, which fit chronologically in the last quarter of the 4th millennium BC, the early period of the Bronze Age (Popovici *et al*., 2016; Popovici *et al*., 2023b). This analysis, of both the nonmetric dental traits (i.e., occurrence, morphological aspects, degree of expression) and the dental wear, reveals phenotypic aspects for a human population not yet explored from a bioarchaeological point of view.

MATERIAL AND METHODS

Material

The dental material analyzed in this study comes from two skeletons dated according to the archaeological inventory as belonging to Jivotilovka Culture, and coded T23M9 and T23M11 (i.e., the skeletons were found in the tumulus T23, and in the tombs M9 and M11 respectively).

The tombs M9 and M11 were discovered in 2022, during the archaeological research of tumulus T23, located in the southern part of Congaz (Găgăuzia ATU, Republic of Moldova) (Figure 1). The tumulus T23 was situated on the upper part of a slope formed by the confluence of the Ialpug and Ialpugel rivers. The tombs M9 and M11 are part of the second cultural and chronological horizon of the archaeological site, being discovered in the first mantle of the tumulus (i.e., in the eastern and southeastern part of the first mantle) that covered a tomb of the Cernavoda I Culture. The deceased were deposited in oval/rectangular pits, in crouched lateral decubitus (i.e., T23M9 on the left side, and T23M11 on the right), with the head facing north- northeast and north-east respectively (Figure 2). The cultural attribution of the graves was made based on the stratigraphic relationship between the complexes identified in the tumulus, the rite and the funeral ritual (Popovici *et al*., 2023b).

Figure 1: Location of the archaeological site considered in this study; map source: https://www.datawrapper.de/

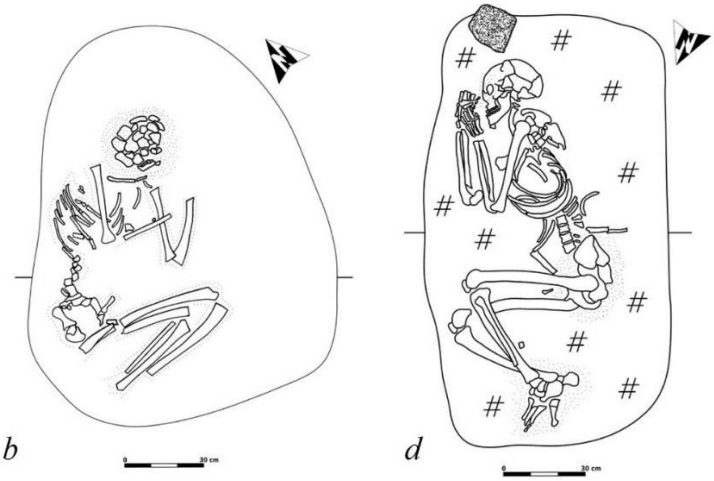


Figure 2: Tumulus T23, Tomb M9: a) photo and b) drawing; Tomb M11: c) photo and d) drawing.

Methods

Ageing and sexing methods. Age at death was estimated based on: the degree of dental crown wear (Smith & Knight, 1984); the pubic symphyseal morphology and the degenerative transformations of the sacroiliac joints (Schmitt, 2005); the structural modification of the spongy tissue in long bones, the ribs' heads' shape, and the presence of degraded bone changes (Latham & Finnegan, 2010; Mays, 2010; Ubelaker, 1979). Sex evaluation in adults was based on: the development of cranial bone relief, forehead shape and its degree of inclination, size of the mastoid apophysis, and mandible characteristics (Walrath *et al*., 2004); pelvic characteristics (Bruzek, 2002; Ferembach *et al*., 1979); development of the muscle insertions, size of the joint surfaces, and the skeleton's massiveness and robustness (Buikstra & Ubelaker, 1994; Mays, 2010).

Dental wear. The dental material was prepared for imaging by removing the impurities using ethanol and hydrogen peroxide. The dental occlusal/incisal macrowear for the incisors (I), canines (C), and premolars (P) was assessed applying the semiquantitative system proposed by Smith (1984), while for the molar teeth (M) the scoring system proposed by Scott (1979) was used. The two score systems are based on enamel loss and dentine exposure. The teeth were grouped into three categories: teeth with invisible or very small wear facets (Smith scale:1–2, Scott scale: 4–9), teeth with moderately advanced wear facets (Smith scale: 3–5, Scott scale: 10–22), and teeth with highly advanced wear facets (Smith scale: 6–8, Scott scale: 23–40) (Tomczyk *et al*., 2020; Tomczyk & Zalewska, 2016). The percent of dentine exposure (PDE%) was calculated only for the molars according to the literature (Calhoun *et al*., 2022; Galbany *et al*., 2014). *Antemortem* and *postmortem* tooth loss was recorded per each tooth. A special type of dental wear (i.e., chipping) was noted during macroscopic inspection based on the morphological features proposed by Scott & Winn (2011). The position of the dental microfractures was recorded as buccal, lingual, mesial, and distal (Towle & Loch, 2021).

Dental non-metric traits. Dental wear is a limiting factor in the identification of dental nonmetric traits, because it could contribute to the obliteration of these traits, mainly those located on the occlusal surfaces of premolars and molars, or on the distolingual surfaces of canines and on the lingual face of upper incisors (Fidalgo *et al*., 2021; Scott & Irish, 2013; Scott & Turner, 1997).

The description and classification of the identified dental traits are based on the ASUDAS reference system. This system currently comprises 42 dental traits that can be examined in the permanent adult dentition, which have been found to be differentially expressed in human populations, and thus useful for biodistance studies. Table 1 shows the description of the dental traits identified in the analyzed material. The description corresponds to ASUDAS (Scott & Irish, 2017; Turner, 1991) and it does not relate to the system of scores (degrees awarded). Description of the expression degree for each trait is realized in section of results.

Table 1

Definitions for the dental morphological traits identified in present study (according to ASUDAS).

Trait (target teeth)	**Short description of trait according to Scott, Irish (2017)**
Labial convexity (I)	Convexity of the labial surface in occlusal view.
Shoveling (I^1)	Lingual fossa deeper of incisor.
Tuberculum dentale (I, C)	Features expressed in the cingular region of the lingual surface
Interruption grooves (I, C)	Depressions (grooves) that interrupt the normal course of the mesial/ distal marginal ridges or even the basal cingulum.
Canine mesial accessory ridge (C)	Ridge on the distolingual fossa, between the tooth apex and the mesiolingualmarginal ridge.
Metacone ($M^{1/2/3}$)	Expression of third cusp.
Hypocone ($M^{1/2/3}$)	Expression of the fourth cusp.
Anterior fovea (M_2) the mesial marginal ridge.	Expression of groove on the anterior occlusal surface, distal to
Hypoconulid ($M^{1/2/3}$)	The fifth cusp size on distal region of molar
Groove pattern ($M^{1/2}$)	***Y***: cusp 2 and cusp 3 are in contact. ***X***: cusp 1 and cusp 4 are in contact. **+**: all four main cusps are in contact in central fovea.
Roots (all teeth)	Number of roots.

Abbreviations: I – incisor; C – canine; P – premolar; M – molar; superscript number – maxillary teeth; subscriptnumber – mandibular teeth.

RESULTS AND DISCUSSION

Age and sex profile

The skeleton T23M9 belongs to a female of 20–25 years old (young adult). It is incomplete, and the preservation status of bones is satisfactory (Bello *et al*., 2006). The cracks that led to the bone fragmentation are produced postmortem.

The skeleton T23M11 is well preserved but incomplete, belonging to an adult male of 35–40 years.

Dental wear

The dental material belonging to the T23M9 female skeleton is represented by only six maxillary teeth. The right second incisor I^2 exhibits a small wear facet with a small area of dentine exposure (Smith score: 2). The left canine (C) and the first left premolar P^1 were the only teeth that showed moderately advanced wear (Smith score: 3), while the left second premolar P^2 showed a small wear facet (Figure 3, a). Both the left first molar M^1 and the left second molar M^2 showed small wear facets (Figure 3, b) summing a percentage of dentine exposure (PDE %) of about 3.86 % and 1.17 % respectively.

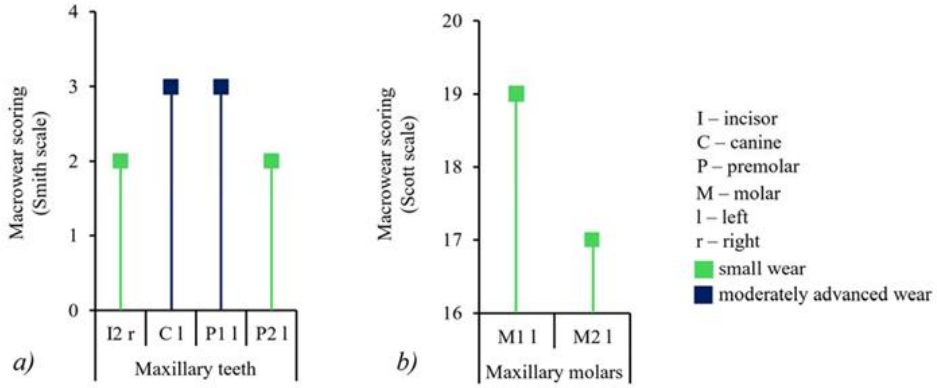


Figure 3: Dental macrowear in the T23M11 skeleton: *a* – scores for incisor (I), canine (C), premolars (P), and *b* – scores for molars (M).

During the macroscopic examination, all teeth from the T23M9 skeleton, except for the first and second premolars (P^1 and $P^{2)}$, showed a special type of dental wear (i.e., chipping). Chipping is defined as an irregular microfracture of the enamel or dentine at the tooth margins and it is the result of high forces applied on teeth (Díaz-Navarro *et al*., 2023; Nikita, 2016). Antemortem fractures are characterized by the smooth edges and color similarity with the adjacent areas of the dental tissues. The second right incisor I^2 and the left canine C show antemortem fractures on the mesial corner of the dental crown (Figure 4 a, b). Both left molars, M^1 and M^2, exhibit chipping in the mesiobuccal area of the crown and in the interproximal zone respectively (Figure 4 c, d).

Regarding the dental anomalies, linear hypoplasia has been identified on the buccal surface of second incisor I^2 (Figure 4, a).

For the T23M11 skeleton, most of the teeth were available for the dental wear assessment, except the mandibular right third molar (M3), the mandibular right canine (C), and the mandibular first right incisor (I1), which were all lost postmortem (Figure 5). No antemortem tooth loss was observed. Both maxillary and mandibular anterior teeth (i.e., incisors and canines) show moderately advanced wear on the incisal/ occlusal surface. All maxillary premolars exhibit larger dentine exposure areas (Smith score: 4 for the left P^1 and P^2 premolars,

and 4 and 5 for the right P^1 and right P^2 respectively) in comparison with the mandibular premolars (Smith score: 3 in all premolar teeth).

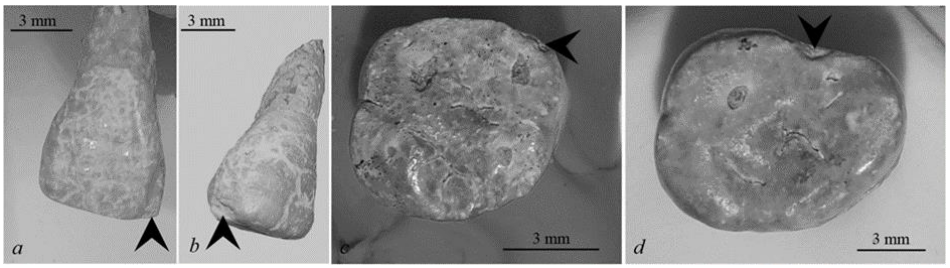


Figure 4: Dental chipping (black arrows) in the T23M9 skeleton: a) maxillary right second incisor (I^2) – buccal view, b) maxillary left canine (C) – buccal view, c) maxillary left first molar (M^1) – occlusal view, d) maxillary left second molar (M^2) – occlusal view.

The mandibular and maxillary molars show a moderately advanced microwear, except for the first molars (M1) that are characterized by an advanced occlusal wear with the following Scott score: 23 for the mandibular right molar (M1), 24 for the mandibular left molar (M1) and maxillary left molar (M^1), and 25 for maxillary right molar (M^1).

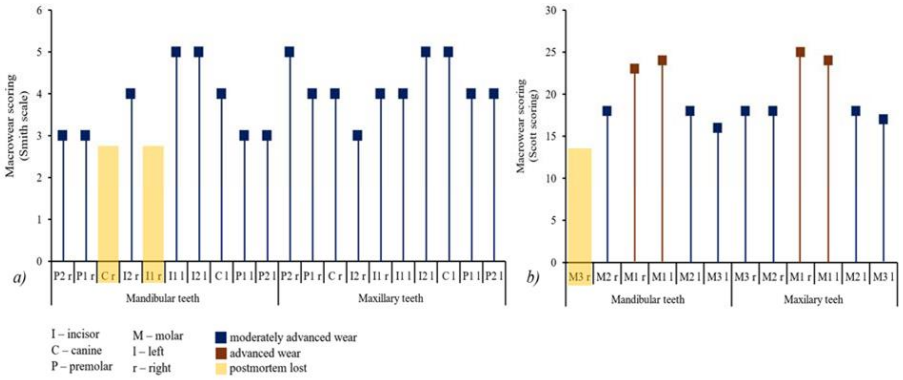


Figure 5: Dental macrowear in the T23M11 skeleton: *a* – scores for incisors (I), canines (C), premolars (P), and *b* – scores for molars (M).

A higher macrowear is highlighted by image analysis in the maxillary first M^1molars (PDE values: right M^1 = 36.1%, and left M^1 = 31.8%) in comparison with the mandibular ones (PDE values: right M1 PDE = 22.4%, and left M1 PDE = 23.1%). The same tendency regarding the occlusal wear is also observed in the second M2 molar. Dental occlusal wear was used in several studies as an indicator for diet abrasiveness and food processing (Górka *et al*., 2016; Petraru *et al*., 2018; Watson, 2008). To compare the obtained PDE values of the M2 molars, a single mean value was used that resulted from both mandibular antimeres and maxillary antimeres. Considering the influence of age on dental wear, the values obtained for the T23M11 skeleton were compared with previously published PDE data

belonging to male individuals, 20–40 years old, discovered in prehistoric archaeological sites from Northeastern Romania (Petraru *et al*., 2022). As Figure 6 shows, the PDE values of the T23M11 are situated within the variation interval generated by the data used in the comparison (Figure 6).

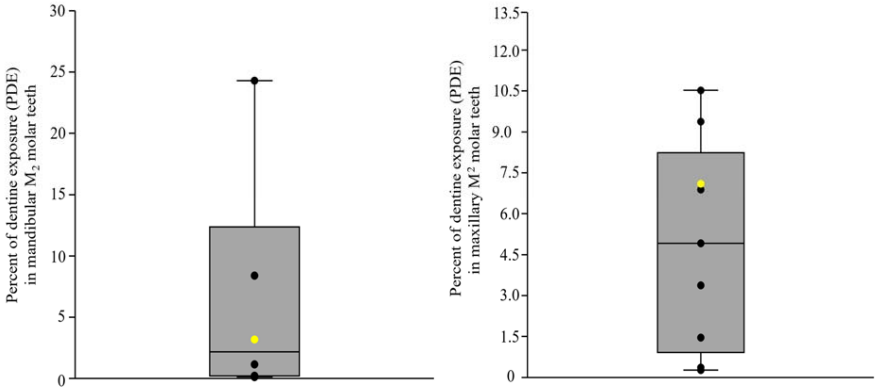
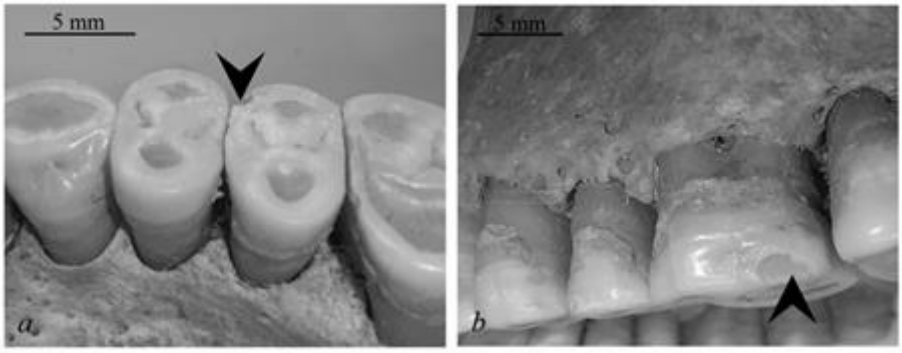


Figure 6: Comparison between the PDE of the T23M11 (yellow dots) and other PDE data belonging to male skeletons (black dots) from prehistoric archeological sites.

The microscopical examination revealed several antemortem microfractures on the dentition of T23M11 skeleton (Figure 7). Chipping was identified in both posterior and anterior teeth. In the T23M11 dental material, all crown microfractures were identified in the left mandibular and maxillary teeth, affecting especially the posterior teeth (i.e., premolars and molars). Chipping was identified on the maxillary second premolar (P^2) on the mesiobuccal corner (Figure 7, a) as well on the mandibular second premolar (P2) on the mesio-lingual corner (Figure 7, c). Also, a larger microfracture revealing the dentine was observed on the buccal surface toward the distal region of the M1 maxilary molar's crown, this being the most evident antemortem fracture in the T23M11 skeleton's dentition (Figure 7, b). A chipped area was identified on the mandibular left M1 molar M1 in the mesiobuccal corner of the dental crown (Figure 7, d). Among the anterior teeth, only three incisors show antemortem fractures: the second left maxillary incisor I^2, the first left maxillary incisor I1, and the second mandibular incisors I2 (Figure 7, e-h).



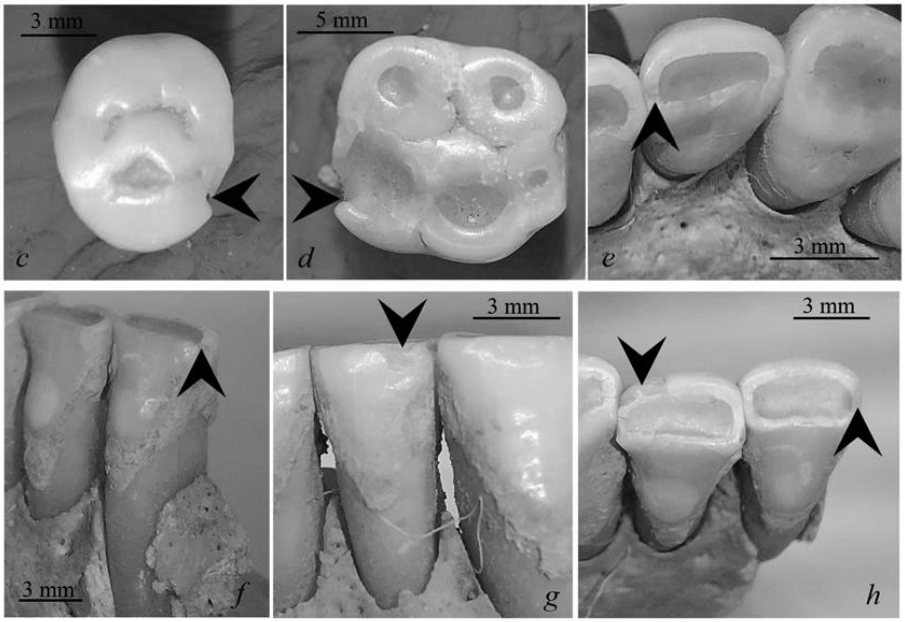


Figure 7: Dental chipping (black arrows) in the T23M11 skeleton: a) second left maxillary P^2 – occlusal view; b) maxillary first left molar M^1 – buccal view; c) second left mandibular premolar P_2 – occlusal view; d) first left mandibular M_1 molar – occlusal view; d) second left maxilary incisor I^2 – incisal/occlusal view; e) first left mandibular I_1 – lingual view; f) second left mandibular incisor I_2 – buccal view; g) left mandibular incisors I_1, I_2 – occlusal view.

Dental macrowear is a cumulative, multifactorial process, being corelated with age but also with physical proprieties and abrasiveness of consumed food, food processing techniques and storage of agricultural products (Fiorenza *et al*., 2018; Peigné & Merceron, 2017; Romero *et al*., 2019). Considering the age at death of the two skeletons belonging to Jivotilovka Culture (i.e., 20–25 years, and 35–40 years respectively), the occlusal wear is noticeable. According to a previous study regarding the influence of age on dental macrowear in a Prehistoric human population from Northeastern Romania, an abrasive diet and food processing techniques are important factors that should be considered in the dental wear studies (Petraru *et al*., 2022). Also according to a study conducted by Mays (2002), the amount of the dental wear is higher in the past human populations compared to recent ones due to the hard particles within aliments consumed in the past. In addition to occlusal or masticatory wear, several studies highlighted also the non-masticatory wear, the last one being the result of using 'teeth as tools' or 'teeth as third hand' (Molnar, 2011; Tanga *et al*., 2016). In this study, antemortem fractures were identified on both anterior and posterior teeth. Such a wear dentified in the anterior teeth could be associated with clamping the teeth while applying force to an object, or with task- related activities such as housework and crafts (Tanga *et al*., 2016; Tencariu *et al*., 2022; Walsh, 2022). In the present study, both individuals showed chipping in the posterior teeth. For the male skeleton chipping shows a particularity, being localized in posterior teeth, only on the left side,

on maxillary and mandibular second premolars and first molars. Chipping in the posterior teeth, especially in molars, can be the result of mastication of hard and abrasive foods (e.g., cereals, fruit stones, bones), particularly in the interproximal area of the dental crown (Bonfiglioli *et al*., 2004; Towle *et al*., 2017).

Dental nonmetric traits

The advanced occlusal wear can make some dental characters not distinguishable. In this study, nonmetric traits such as deflecting wrinkle on the mandibular first molar, double shoveling on the incisors or accessory ridge on the maxillary canine could not be recognized in the case of advanced dental wear, while the appreciation of expression degree for the anterior fovea on the first mandibular molars was not done for the same reason.

Therefore, morphological aspects of teeth and 14 dental traits of the dental crown and roots are described, those which allowed an objective assessment.

Dental traits in T23M9 skeleton

Maxillary right second incisor (I^2)

The crown shape in buccal view is slightly flattened with nearly parallel mesial and distal borders. The labial surface (Labial Convexity) of the I^2 is flat scored to grade 0. Shoveling involves the development of mesial and distal marginal ridges on the lingual surface. The complete absence of marginal ridges is rare on I^2 (Scott & Irish, 2017); we note in the studied tooth an asymmetry related to the development of these two edges, the prominent mesial edge as opposed to the unexpressed the distal one (Figure 8, a). Tuberculum dentale evolves from the cingulate region of the lingual surface of teeth. This trait develops two ridges, the mesial one more pronounced than the distal one (grade 4) (Figure 8, a). The root of I^2 is straight, mesiodistally flattened and with a rounded shape in apical area (Figure 9, a). It has the same length as the crown height on labial view.

Maxillary left canine (C)

There is no tuberculum dentale, there is just a wide mesially placed, lingual longitudinal ridge without shoveling. The root is conical and mesiodistally flattened with narrowing in the middle region (Figure 9, b). A longitudinal groove runs along the root on both the mesial and distal faces.

Maxillary left premolars

The first premolar (P^1). The occlusal surface of the premolars has a hexagonal shape. The buccal cusp is medially placed, with a slight positioning of the lingual cusp in relation to the buccolingual longitudinal axis in occlusal space. Both cusps have strong margins relating to prominent mesial and distal marginal straight ridges. The central groove is placed slightly lingually and, as a result, the buccal cusp appears to be larger. The root cones (buccal and lingual) seem to be separated by an inter-radicular projection located in the apical third (Figure 9, c). The apical aspect of the root of the premolar highlights a probable case of taurodontism, variation in tooth form known since the Neanderthals until modern human (Tomov & Tineshev, 2016). Taurodontism is a tooth anomaly, described by the lack of constriction at the cemento- enamel junction, and by an elongated pulp chamber with apical

displacement of bifurcation in the roots (Dineshshankar *et al*., 2014). One of the first attempts to classify taurodontism was made by Shaw (1928), using the apical displacement of the pulp chamber floor as criterium. Accordingly, the external morphological aspect of the root of the analyzed premolar would correspond to the mesotauridon subclass. Although it is considered one of the most important abnormalities in tooth morphology (Jayashankara *et al*., 2013), whose causes are not fully elucidated, this finding is not the main subject of this study.

The second premolar P^2. The occlusal surface shows two well-developed cusps (buccal and lingual) with pronounced mesial accessory ridge (grade 4) (Figure 8, b). It has a single root with distinct root cones (bifurcated root) (Figure 9, d). The same phenomenon of taurodontism mentioned in the previous premolar could also be present in this premolar. According to the morphological aspect, this would correspond to the subclass of hypertaurodontism (Shaw, 1928).

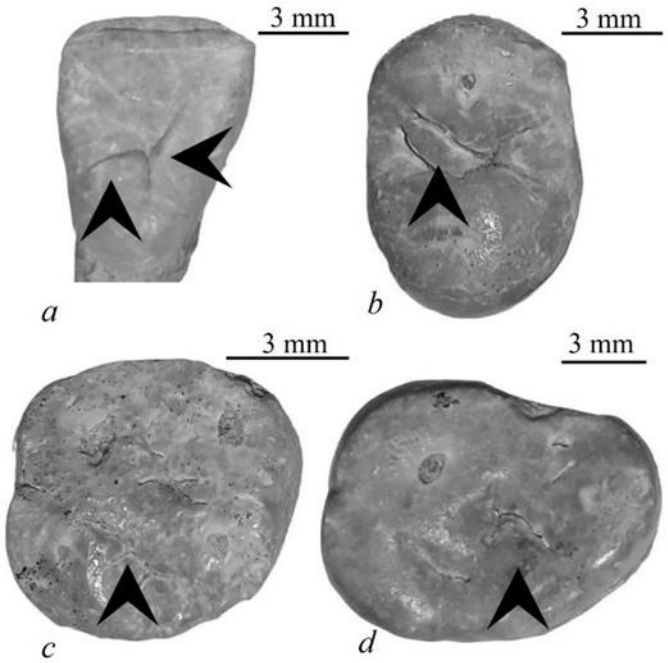


Figure 8: Morphological aspects of dental crowns in the T23M9 skeleton; a) tuberculum dentale and mesial marginal ridge on the first maxillary incisor I^1; b) mesial accessory ridge on the second maxillary premolar P^2; c) bifurcated hypocone of first maxillary molar M^1; d) moderate metacone of second maxillary molar M^2.

Maxillary left molars

In terms of morphology, the most stable tooth of the maxillary is the first molar. The hypocone is almost invariably present on the first molar, maintaining its ancestral four-cusped form in most individuals. The second molar varies much more than the first molar but much less than the third molar. For this reason, the main tooth for recording the hypocone expression is the second maxillary molar. Thus, the hypocone of the first molar in T23M9 is well developed, but it will not obtain a score.

The first M1 molar. The occlusal shape is roughly rhomboidal, wider mesially than distally and wider lingually than buccally. The four cusps are well defined, with the mesial and distolingual cusps well developed. Although it can be easily confused with the 5th distal cusp, the hypocone appears bifurcated due to groove development. The groove dividing the hypocone into two roughly equal sections is preserved even with teeth wear. The metacone is smaller than the hypocone with a size that falls between grades 3 and 4 (weak-large metacone). The permanent maxillary molars are described as teeth with three roots: two buccal and one lingual (Figure 9, e). Three well-developed roots are observed (two buccal and one lingual). The lingual root is formed by two fused root cones and the two buccal roots are conical and straight.

The second M2 molar. This molar shows, as in the case of the previous molar (M^1), four well-defined cusps, with a developed hypocone (grade 5) and a moderate metacone (grades 3–4). It has two roots, of which the buccal one with visible cones originating from the fusion of three roots, with a trifurcated tip (Figure 9, f, g).

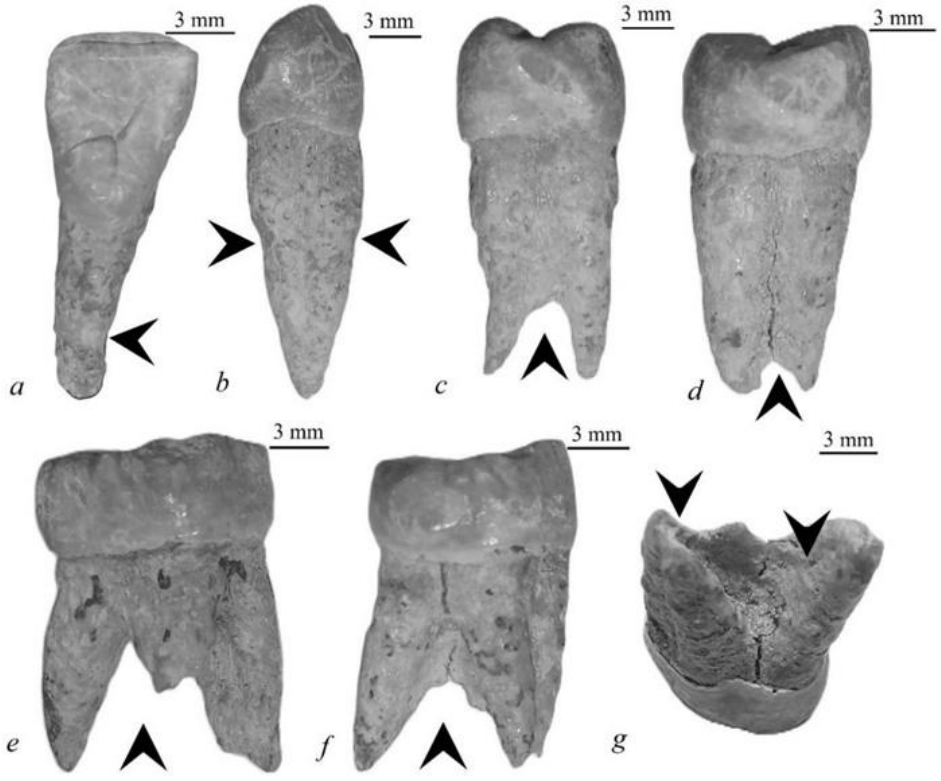


Figure 9: Morphological aspects of the dental roots in the T23M9 skeleton: a) enamel extension on lingual view of second maxillary incisor I^2; b) strangulation buccolingual of root in maxillary canine C; c) first left maxillary premolar P^1– bifurcation of root view, d) second premolar P^2 – bifurcation root; e) first maxillary molar M^1– aspect of roots, f) second maxillary molar M^2 – aspect of root; g) second maxillary molar M^2 – apical view of root.

Dental traits in T23M11 skeleton

The morphology of 28 teeth is described for skeleton T23M11. The roots do not exhibit particularities to be highlighted.

Maxillary teeth

Maxillary first incisors. Labial Convexity – the crown shape in buccal view is slightly curved, with a moderate convexity (grade 3). The wear of the incisors still allows the observation of shoveling and its expression degree (Figure 10, a). The marginal ridges do not extend to the basal eminence (grade 3 – high moderate: ridges more pronounced, almost coalescing at basal eminence). The tuberculum dentale is not expressed on the central incisors.

Second maxillary incisors. Interruption grooves (IG) were identified on the lingual fossa of the second maxillary incisors. The interruption groove, whose presence is most often recorded on maxillary I^2, is a distinct depression or groove that interrupts the normal course of the mesial or distal marginal ridge or even the basal cingulum (Scott & Irish, 2017). We note that this trait exhibits itself differently on the two lateral incisors (antimeres) of T23M11. On the left I^2, the IG crosses the lingual fossa from the mesial to the distal incisal edge (MD), and on the right I^2, the IG manifests on the medial part of the basal cingulum, and it probably extends onto the root (med) (Figure 10, a).

Maxillary canines. The Bushman canine can only be seen on the right tooth. The Bushman Canine is usually premolariform due to the great development of the internal cingulum (Sakuma *et al*., 1991). It is presented in the form of mesiolingual ridge larger than the distolingual and is attached to the dental tuberculum. The mesiolingual ridge is much larger than the distolingual and it is fully incorporated into the tuberculum dentale (Morris's type form, 3) (Scott & Irish, 2017) (Figure 10, a). Due to the advanced degree of canine wear, other features such as accessory ridges were not observable.

Maxillary premolars. The tips of both buccal and lingual cusps in premolars are rounded due to wear; it was not possible to identify any dental character.

Maxillary molars. The occlusal surface for all three molars reveals an advanced degree of wear, but still allows the delimitation of the cusps and definition scores according to ASUDAS system. The occlusal shape of the M^1 and M^2 maxillary molars is roughly rhomboidal, wider mesially than distally and wider buccally than lingually. The four cusps are well defined and well developed. The roots are straight with 3 roots (two buccal and one mesial).

Mandibular teeth

The morphology of the mandibular teeth is a simple one in which, due to the advanced degree of dental wear, not many nonmetric traits could be identified (Figure 10, b). The mandibular incisors have a flat buccal surface near cervical margins. The lingual surface is concave toward the incisal margin. The cingulum and marginal ridge were not identified. The roots are mesiodistally flattened.

Mesial and distal margins of the mandibular canine have triangular shape with with concave cervical margins and no cingulum on the lingual surface.

The occlusal surface of the premolars has a regular rounded shape with two well delimited cusps (buccal and labial) and one straight root.

The mandibular molars have 4–5 major cusps: protoconid (cusp 1, mesiobuccal), metaconid (cusp 2, mesiolingual), hypoconid (cusp 3, distobuccal), entoconid (cusp 4, distolingual), and hypoconulid (cusp 5, distal); the groove pattern is defined by how the cusps interact with the fossa. The *Y* pattern is considered ancestral pattern and frequently observed in Caucasoid groups, and *X* and + patterns are derived patterns of the first. The first mandibular molar M1 with 5 well-defined cusps has a *Y* groove pattern (i.e., cusp 2 and cusp 3 are in contact). We notice an asymmetry between the patterns of the two antagonistic M2 molars. The display of the intercuspid grooves allows the contact of cusps 1 and 4 in the central fossa on the right M2 molars (*4x* groove pattern), instead on the left M2 tooth the contact is allowed between all 4 cusps in the central fossa (*4+* groove pattern) (Figure 10, c, d).

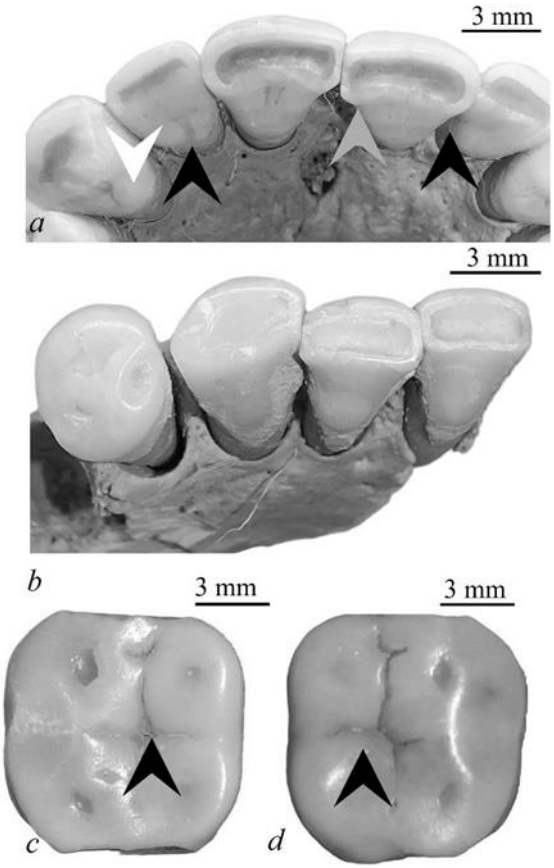


Figure 10: Morphological aspects of teeth in the T23M11 skeleton: a) anterior teeth: gray arrow – shoveling on first incisor; black arrow – interruption groove on lateral incisors; white arrow – Bushman canine on left canine;
b) left mandibular fragment with I_1, I_2, C, P_1; c) second left mandibular molar M_2 – + grove pattern; d) second right mandibular molar M_2 – *X* groove pattern.

The occurrence of asymmetry in the dental arch is considered to be directly proportional to developmental and genetic stresses during in utero dental

development (Harris & Nweeia, 1980; Saunders & Mayhall, 1982; Springs Pacelli & Márquez-Grant, 2010). Some authors adhere to the conception that environmental factors, such as noise, cold and heat, challenge developmental stability and are thus related to antimeric asymmetry (Mays, 2021).

Studies of dental morphology carried out on current populations indicate that the most frequent occlusal configuration for permanent first mandibular molar is *Y5*, while for the second molar is *4+* (Axelsson & Kirveskari, 1981; Phulari *et al*., 2017; Shetty *et al*., 2016). We also note that the same configuration of *4+* for the second mandibular molar was found predominant in Bronze Age populations from the NE region of Romania (Popovici *et al*., 2022), unlike those from the 16th-17th centuries in the same region of Romania where the *X* groove pattern prevailed (72.72% of dental sample), followed by + groove pattern (27.28%) (Popovici *et al*., 2023a).

The anterior fovea is expressed on the mesial surface of the lower molars' trigonid. It includes three elements: distinct essential ridges on the protoconid and metaconid cusps that meet at the center of the trigonid, and a mesial marginal ridge that is expressed to differing degrees (Scott & Irish, 2017).

The anterior fovea is expressed in the mandibular M2 as an essential ridge, pronounced and well developed, producing a distinctive fovea on the anterior portion of the trigonid (grade 3).

The third mandibular molar M3 shows a clear delimitation of the cusps with contact in the central fossa for the cusps 1 and 4 (*X* groove pattern).

CONCLUSIONS

This study of dental morphology highlights the dental particularities of two skeletons belonging to Early Bronze Age, Jivotilovka Culture, discovered in Congaz, (Găgăuzia Autonomous Territorial Unit, Republic of Moldova).

The occlusal wear and antemortem fractures identified especially on posterior teeth could be the result of the consumption of abrasive and hard foods. The dental microfractures identified on the anterior teeth could indicate their use for non-masticatory activities.

The dental features of the crowns and roots were described, for six teeth of the T23M9 skeleton and 28 of the T23M11 skeleton. Some morphological particularities were mentioned in this study, such as: a possible taurodontism in maxillary premolars, the asymmetry of traits in antimere teeth (i.e., groove pattern in the mandibular second molar, interruption groove in the maxillary second incisor). This asymmetric expression in dental morphology could be due to intrinsic or extrinsic causes, such as genetic abnormalities, malnutrition, disease, or developmental stress.

This research contributes to the dental non-metric trait register in dental anthropology providing new data on the Jivotilovka Culture previously unstudied bioarchaeologically.

REFERENCES

Alanazi, A. A., Almutair, A. M., Alhubayshi, A., Almalki, A., Naqvi, Z. A., Alassaf, A., . . . Mallineni, S. K. (2022). Morphometric analysis of permanent canines: preliminary findings on odontometric sex dimorphism. *International Journal of Environmental Research and Public Health*, **19**(4), 2109.

Axelsson, G., & Kirveskari, P. (1981). Cusp number and groove pattern of lower molars in Icelanders. *Acta Odontologica Scandinavica*, **39**(6), 361–364.

Baby, T. K., Sunil, S., & Babu, S. S. (2017). Nonmetric traits of permanent posterior teeth in Kerala population: A forensic overview. *JOMFP*, **21**(2), 301.

Bello, S. M., Thomann, A., Signoli, M., Dutour, O., & Andrews, P. (2006). Age and sex bias in the reconstruction of past population structures. *American Journal of Physical Anthropology: The Official Publication of the American Association of Physical Anthropologists*, **129**(1), 24–38.

Bonfiglioli, B., Mariotti, V., Facchini, F., Belcastro, M. G., & Condemi, S. (2004). Masticatory and non-masticatory dental modifications in the epipalaeolithic necropolis of Taforalt (Morocco). *International Journal of Osteoarchaeology*, **14**(6), 448–456.

Bruzek, J. (2002). A method for visual determination of sex, using the human hip bone. *American Journal of Physical Anthropology*, **117**(2), 157–168.

Buikstra, J., & Ubelaker, D. (1994). *Standards for Data Collection from Human Skeletal Remains: Research Seminar* Fayetteville: Arkansas Archaeological Survey Research Series, No. 44.

Calhoun, G. V., Guatelli-Steinberg, D., Lagan, E. M., & McGraw, W. S. (2022). Dental macrowear, diet, and anterior tooth use in Colobus polykomos and Piliocolobus badius. *Journal of human evolution*, **163**, 103123.

Deter, C. (2012). Correlation between dental occlusal wear and approximal facet length. *International Journal of Osteoarchaeology*, **22**(6), 708-717.

Díaz-Navarro, S., García-González, R., Cirotto, N., & Uriarte, M. H. (2023). New insight into prehistoric craft specialisation. Tooth-tool use in the Chalcolithic burial site of Camino del Molino, Murcia, SE Spain. *Journal of Archaeological Science: Reports*, **50**, 104066.

Dineshshankar, J., Sivakumar, M., Balasubramanium, A. M., Kesavan, G., Karthikeyan, M., & Prasad, V. S. (2014). Taurodontism. *Journal of Pharmacy and Bioallied Sciences*, **6**(Suppl 1), S13-S15.

Eshed, V., Gopher, A., & Hershkovitz, I. (2006). Tooth wear and dental pathology at the advent of agriculture: new evidence from the Levant. *American Journal of Physical Anthropology*, **130**(2), 145–159. doi: https://doi.org/10.1002/ajpa.20362

Ferembach, D., Schwidetzky, I., & Stloukal, M. (1979). Recommandations pour déterminer l'âge et le sexe sur le squelette. *Bulletins et Mémoires de la Société d'Anthropologie de Paris*, **6**(1), 7–45.

Fidalgo, D., Santos, V. W. d. A., & Hübbe, M. (2021). The impact of dental wear on the analysis of morphological affinities based on dental non-metric traits. *Dental Anthropology*, **34**(2), 44–56.

Fidalgo, D., Wesolowski, V., & Hubbe, M. (2022). Biological affinities of Brazilian pre- colonial coastal communities explored through bootstrapped biodistances of dental non-metric traits. *Journal of Archaeological Science*, **138**, 105545.

Fiorenza, L., Benazzi, S., Oxilia, G., & Kullmer, O. (2018). Functional relationship between dental macrowear and diet in Late Pleistocene and recent modern human populations. *International Journal of Osteoarchaeology*, **28**(2), 153-161. doi:https://doi.org/10.1002/oa.2642

Galbany, J., Romero, A., Mayo-Alesón, M., Itsoma, F., Gamarra, B., Pérez-Pérez, A., Charpentier, M. J. (2014). Age-related tooth wear differs between forest and savanna primates. *PLOS One*, **9**(4), e94938. doi: https://doi.org/10.1371/journal.pone.0094938

Górka, K., Romero, A., & Pérez-Pérez, A. (2016). Dental-macrowear and diet of Tigara foragers from Point Hope, northern Alaska. *Anthropologischer Anzeiger*, **73**(3), 257–264. doi:DOI: 10.1127/anthranz/2016/0613

Harris, E. F., & Nweeia, M. T. (1980). Dental asymmetry as a measure of environmental stress in the Ticuna Indians of Colombia. *American Journal of Physical Anthropology*, **53**(1), 133–142.

Hernaiz-García, M., Oxilia, G., Benazzi, S., Sarig, R., Fu, J., Kullmer, O., & Fiorenza, L. (2024). Diet of Neanderthals and early Homo sapiens from macrowear analysis of mandibular molars. *Journal of Archaeological Science*, **164**, 105950.

Hernaiz-García, M., Zanolli, C., Martín-Francés, L., Mazurier, A., Benazzi, S., Sarig, R., . . .
Fiorenza, L. (2024). Masticatory habits of the adult Neanderthal individual BD 1 from La Chaise-de-Vouthon (France). *American Journal of Biological Anthropology*, e24926.
Hubbard, A. R., Guatelli-Steinberg, D., & Irish, J. D. (2015). Do nuclear DNA and dental nonmetric data produce similar reconstructions of regional population history? An example from modern coastal K enya. *Am. J. Phys. Anthropol.*, **157**(2), 295–304.
Ivanova, S. V. (2015). «Протобуджакский горизонт» Северо-Западного Причерноморья. *Stratum plus. Археология и культурная антропология*(2), 275–294.
Jerat, A., Jurec, Z., & Kamenečki, K. (2015). Morphological features of human molars of archaeological and contemporary origin. *Bull. Int. Assoc. Paleodont.*, **9**(1), 29–42.
Kaifu, Y. (1999). Changes in the pattern of tooth wear from prehistoric to recent periods in Japan. *American Journal of Physical Anthropology*, **109**(4), 485–499.
doi:https://doi.org/10.1002/(SICI)1096-8644(199908)109:4<485::AID- AJPA5>3.0.CO;2-K Latham, K. E., & Finnegan, M. (2010). *Age Estimation of the Human Skeleton*. Illinois, USA: Charles C Thomas.
Levrini, L., Di Benedetto, G., & Raspanti, M. (2014). Dental wear: a scanning electron microscope study. *BioMed research international*, **2014**, Article ID 340425, 340427. doi:https://doi.org/10.1155/2014/340425
Liu, W., Athreya, S., Xing, S., & Wu, X. (2022). Hominin evolution and diversity: a comparison of earlier-Middle and later-Middle Pleistocene hominin fossil variation in China. *Philosophical Transactions of the Royal Society B*, **377**(1847), 20210040.
López-Onaindia, D., Schmitt, A., Gibaja, J. F., & Subirà, M. E. (2022). Non-metric dental analysis of human interactions around the Pyrenees during the Neolithic and their biological impact. *Annals of Anatomy-Anatomischer Anzeiger*, **242**, 151895.
Lukacs, J. R., & Kuswandari, S. (2022). Crown dimensions of Malay deciduous teeth: sex dimorphism and tooth size in Asia. *Archives of Oral Biology*, **141**, 105481.
Maaranen, N., Zakrzewski, S., Kharobi, A., Stantis, C., Prell, S., Bietak, M., & Schutkowski, H. (2021). The people of Avaris: Intra-regional biodistance analysis using dental non- metric traits. *Bioarchaeology of the Near East*, **15**, 1–24.
Manzura, I. (2016). North-Pontic steppes at the end of the 4th millennium BC: the epoch of broken borders. *Man, culture and society from the Copper Age until the Early Iron Age in Northern Eurasia. Contributions in honour of the 60th anniversary of Eugen Sava. Chișinău*, 53–75.
Manzura, I., Savva, E., & Bogataya, L. (1995). East-west interactions in the Eneolithic and Bronze Age cultures of the north-west Pontic region. *Journal of Indo-European studies*, **23**(1–2), 1–51.
Mays, S. (2002). The relationship between molar wear and age in an early 19th century AD archaeological human skeletal series of documented age at death. *Journal of Archaeological Science*, **29**(8), 861-871. doi: https://doi.org/10.1006/jasc.2001.0751
Mays, S. (2010). *The archaeology of human bones*: Routledge. Mays, S. (2021). *The archaeology of human bones*: Routledge.
Mazumder, P., Bahety, H., Das, A., Mahanta Sr, P., Saikia, D., Konwar Sr, R., & Konwar IV, R. (2023). Sexual Dimorphism in Teeth Dimension and Arch Perimeter of Individuals of Four Ethnic Groups of Northeastern India. *Cureus*, **15**(4).
Molnar, P. (2011). Extramasticatory dental wear reflecting habitual behavior and health in past populations. *Clinical Oral Investigations*, **15**(5), 681-689. doi: DOI 10.1007/s00784- 010-0447-1
Nikita, E. (2016). *Osteoarchaeology: A guide to the macroscopic study of human skeletal remains*. London: Academic Press.
Peigné, S., & Merceron, G. (2017). Palaeoecology of cave bears as evidenced by dental wear analysis: a review of methods and recent findings. *Historical Biology*, **31**, 1–13. doi: https://doi.org/10.1080/08912963.2017.1351441
Petraru, O.-M., & Bejenaru, L. (2019). Overview On Microscopic Methods For Dental Wear Evaluation In Paleodiet Studies. *Annuaire Roumain d'Anthropologie*, **56**, 5–14.
Petraru, O.-M., Bejenaru, L., & Popovici, M. (2022). Diet-related dental wear in archaeological human populations of Chalcolithic and Bronze Age from North-Eastern Romania. *Homo - Journal of Comparative Human Biology*, **73**(1), 77–92.

Petraru, O.-M., Groza, V.-M., & Bejenaru, L. (2018). Dental macrowear as marker of diet: considerations on the skeletal sample from the 17th century necropolis of Iaşi (Iaşi County, Romania). *Annuaire Roumain d'Anthropologie*, **55**, 45–54.

Phulari, R. G., Rathore, R., Takvani, M. D., & Jain, S. (2017). Evaluation of occlusal groove patterns of mandibular first and second molars in an Indian population: A forensic anthropological study. *Indian Journal of Dental Research*, **28**(3), 252-255.

Piccirilli, E., Sorrentino, R., Lugli, F., Bortolini, E., Silvestrini, S., Cavazzuti, C., . . . Köhler,

K. (2023). New insights on Celtic migration in Hungary and Italy through the analysis of non-metric dental traits. *PloS one*, **18**(10), e0293090.

Popovici, M., Bacumenco-Pîrnău, L., Petraru, O., Bejenaru, L., & Groza, V.-M. (2023a). Dental non-metric traits in human skeletons of 16th-17th centuries discovered at Vovidenia church from Iași city (Romania). *Annuaire roumain d'Anthropologie*, **60**.

Popovici, M., Groza, V.-M., Bejenaru, L., & Petraru, O.-M. (2022). Dental morphological variation in Chalcolithic and Bronze Age human populations from North-Eastern Romania. *Ann. Anat.*, 152015.

Popovici, S. (2020). *Ecouri Nort-Vest Caucaziene în complexele tumulare timpurii din Nort- Vestul Mării Negre*.

Popovici, S., Ciobanu, I., Agulnicov, S., & Noroc, I. (2016). Tumulul 8 de la Cimişlia. Consideraţii preliminare. *Arheologia Preventivă în Republica Moldova*(3), 19–28.

Popovici, S., Vornic, V., Agulnicov, S., Heghea, S., Ciobanu, I., Avram, D., & Iorga, A. (2023b). *Tumulul 23 de la Congaz (UTA Găgăuzia). Cercetări arheologice preventive din anul 2022.* Paper presented at the Cercetări arheologice în Republica Moldova.

Rassamakin, J. J. (2004). *Die nordpontische Steppe in der Kupferzeit: Gräbr aus der Mitte des*

5. jts. bis Ende des 4. jts. v. Chr: von Zabern.

Rassamakin, Y. (1996). On early elements of the Globular Amphora culture and other Central European cultures in the Late Eneolithic of the Northern Black Sea region.

Rathmann, H., Perretti, S., Porcu, V., Hanihara, T., Scott, G. R., Irish, J. D., . . . Harvati, K. (2023). Inferring human neutral genetic variation from craniodental phenotypes. *PNAS nexus*, **2**(7), pgad217.

Rathmann, H., Reyes-Centeno, H., Ghirotto, S., Creanza, N., Hanihara, T., & Harvati, K. (2017). Reconstructing human population history from dental phenotypes. *Sci. Rep.*, **7**(1), 1-9.

Romero, A., Ramirez-Rozzi, F. V., Cuesta-Torralvo, E., & Pérez-Pérez, A. (2019). Age-related tooth wear in African rainforest hunter-gatherers. *American Journal of Physical Anthropology*, **170**(4), 622-628. doi: https://doi.org/10.1002/ajpa.23934

Sakuma, M., Irish, J. D., & Morris, D. H. (1991). The Bushman maxillary canine of the Chewa tribe in east-central Africa. *Journal of the anthropological society of Nippon*, **99**(4), 411–417.

Saunders, S. R., & Mayhall, J. T. (1982). Fluctuating asymmetry of dental morphological traits: new interpretations. *Human biology*, 789–799.

Schmidt, C. W. (2010). On the relationship of dental microwear to dental macrowear. *American Journal of Physical Anthropology*, **142**(1), 67–73. doi: https://doi.org/10.1002/ajpa.21197

Schmitt, A. (2005). Une nouvelle méthode pour estimer l'âge au décès des adultes à partir de la surface sacro-pelvienne iliaque. *Bulletins et Mémoires de la Société d'Anthropologie de Paris*(17 (1–2)), 89–101.

Scott, E. C. (1979). Dental wear scoring technique. *American Journal of Physical Anthropology*, **51**(2), 213–217. doi: https://doi.org/10.1002/ajpa.1330510208

Scott, G. R., & Irish, J. D. (2013). *Anthropological perspectives on tooth morphology: Genetics, evolution, variation* (Vol. 66): Cambridge University Press.

Scott, G. R., & Irish, J. D. (2017). *Human tooth crown and root morphology*: Cambridge University Press.

Scott, G. R., & Turner, C. G. (1997). *Anthropology of modern human teeth*: Cambridge University Press Cambridge.

Scott, G. R., & Winn, J. R. (2011). Dental chipping: contrasting patterns of microtrauma in Inuit and European populations. *International Journal of Osteoarchaeology*, **21**(6), 723–731.

Shaw, J. M. (1928). Taurodont teeth in South African races. *Journal of anatomy*, **62**(Pt 4), 476. Shetty, U. A., Shetty, P., & D'Cruz, A. M. (2016). Determination of cusp number and occlusal groove pattern in mandibular molars: A preliminary epidemiological study in an Indian population. *Journal of Forensic Science and Medicine*, **2**(2), 98–101.

Smith, B., & Knight, J. (1984). An index for measuring the wear of teeth. *British Dental Journal*, **156**, 435–438.

Smith, B. H. (1984). Patterns of molar wear in hunter–gatherers and agriculturalists. *American Journal of Biological Anthropology*, **63**(1), 39–56.

Springs Pacelli, C., & Márquez-Grant, N. (2010). Evaluation of dental non-metric traits in a medieval population from Ibiza (Spain). *Bull. Int. Assoc. Paleodont.*, **4**(2), 16–28.

Tanga, C., Quintili, V., Tinarelli, R., D'anastasio, R., & Viciano, J. (2016). Non-masticatory dental lesions in the Samnite necropolis of Alfedena (3rd–5th centuries BCE; central- southern Italy). *Journal of Paleopathology*, **26**, 15–26.

Tencariu, F. A., Asăndulesei, A., Simalcsik, A., Brașoveanu, C. M., Petraru, O.-M., Bejenaru, L., . . . Pîrnău, R. G. (2022). A bolt from the blue: investigations of a singular Bronze Age grave from the Chalcolithic site Ruginoasa (north-eastern Romania). *Archaeological and Anthropological Sciences*, **14**(5), 1–18.

Tomczyk, J., Myszka, A., Regulski, P., & Olczak-Kowalczyk, D. (2020). Case of pulp stones and dental wear in a Mesolithic (5900±100 bc) individual from Woźna Wieś (Poland).

International Journal of Osteoarchaeology, **30**(3), 375–381. doi: https://doi.org/10.1002/oa.2856

Tomczyk, J., & Zalewska, M. (2016). Mechanical and chemical dental wear in historical population from the Syrian lower Euphrates valley. *Archives of oral biology*, **62**, 49–57. doi: https://doi.org/10.1016/j.archoralbio.2015.11.011

Tomov, G., & Tineshev, S. (2016). Taurodontism: from Neanderthals till modern human population. *Bulletin of the International Association for Paleodontology*, **10**(2), 39–45. Towle, I., Irish, J. D., & De Groote, I. (2017). Behavioral inferences from the high levels of dental chipping in Homo naledi. *American journal of physical anthropology*, **164**(1), 184–192.

Towle, I., & Loch, C. (2021). Tooth chipping prevalence and patterns in extant primates. *American Journal of Physical Anthropology*, **175**(1), 292–299.

Turner, C. I. (1991). Scoring procedures for key morphological traits of the permanent dentition. ASU Dental Anthropology System. In L. C. Kelley MA (Ed.), *Advances in dental anthropology* (pp. 13–31). New York: Wiley-Liss.

Ubelaker, D. (1979). *Human Skeletal Remains: Excavation, Analysis and Interpretation*: Smithsonian Institute Press.

Walrath, D. E., Turner, P., & Bruzek, J. (2004). Reliability test of the visual assessment of cranial traits for sex determination. *American Journal of Physical Anthropology*, **125**(2), 132–137.

Walsh, S. (2022). Early evidence of extra-masticatory dental wear in a Neolithic community at Bestansur, Iraqi Kurdistan. *International Journal of Osteoarchaeology*, **32**, 1264–1274. Watson, J. T. (2008). Changes in food processing and occlusal dental wear during the early agricultural period in northwest Mexico. *American Journal of Physical Anthropology*, **135**(1), 92–99. doi: https://doi.org/10.1002/ajpa.20712

Yang, G., Chen, Y., Li, Q., Benítez, D., Ramírez, L. M., Fuentes-Guajardo, M., Gonzalez

Jose, R. (2023). Dental size variation in admixed Latin Americans: Effects of age, sex and genomic ancestry. *PloS one*, **18**(5), e0285264.

Ковалева, И. (1978). Погребения животиловсколго типа в Присамарье. *Курганные древности степного Поднепровья*, 46–54.

Манзура, И. В. (1990). *Переходный период от энеолита к эпохе бронзы в Нижнем Поднестровье и Попрутье.* АН СССР. Ин-т археол. Ленинград. отд-ние.

Субботин, Л., & Шмаглий, Н. (1970). Болградский курганный могильник. *Материалы по археологии Северного Причерноморья*.

Яровой, Е. В. (2000). Скотоводческое население Северо-Западного Причерноморья эпохи раннего металла.

https://www.doi.org/10.59277/annanthrop.2024.61.08

PRELIMINARY ODONTOMETRIC STUDY ON A SAMPLE OF HUMAN SECOND MOLARS OF 16TH-19TH CENTURIES, FROM THE CITY OF IAȘI (ROMANIA)

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Owing to their excellent postmortem preservation, teeth are particularly important in archeological and forensic contexts. Teeth have been studied in several bioarchaeological research areas including crown morphology and size. Although odontometrics received attention in the last decades, there are few studies regarding tooth crown dimensional variability in past human populations from Romania. This study refers to the metric variability assessment of the second molar (M2) crown belonging to human skeletons of 16th-19th centuries discovered during archaeological excavations in the city of Iași (Romania). Variables such as buccolingual (BL) and mesiodistal (MD) diameters, crown index (CI), crown area (CA), and sexual dimorphism index (SDI) were subjected to univariate and multivariate statistical analyses. The results show that the maxillary second molar (M^2) in male has the higher variability for the both BL and MD diameters. No significant differences were obtained between male and female series in four variables (i.e., BL, MD, CI, CA). The discriminant analysis highlighted new aspects regarding the implication of the CA and CI variables in the discriminant functions of the sexual dimorphism, although not statistically supported. This study represents a new contribution to the knowledge of dental variability in medieval and premodern human populations from Iași city.

Keywords: second molar, crown metric variability, Iași, 16th-19th centuries.

INTRODUCTION

Teeth are a valuable source of information for anthropologists, archaeologists, and forensic researchers (Liappis *et al*., 2024; Parsons *et al*., 2024). Due to the resistance of their hard tissues to postmortem changes, teeth have been subjected to several study methodologies being a "window into the lifestyle of ancient peoples" (Forshaw, 2024). In paleoanthropology, dental material is useful in various topics such as estimation of age at death (Buikstra & Ubelaker, 1994),

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palaeohistology (Bautista, 2023; Bertrand *et al*., 2019; Pradeep *et al*., 2021), identification of oral pathologies as indicators for infectious diseases and nutritional deficiencies (Caruso & Nikita, 2024; Esclassan *et al*., 2009; Snoddy *et al*., 2024), diet analysis (García-González *et al*., 2015; Petraru *et al*., 2020b; Schmidt, 2018; Xia *et al*., 2015), indicator of cultural activities (Walsh, 2022; Wasterlain *et al*., 2016), (Nikita, 2020; Pilloud *et al*., 2016), biodistance analysis, and morphological variations in past human populations (Nikita, 2020; Pilloud *et al*., 2016; Popovici *et al*., 2021). The morphology and size of the dental crown and root, as well as missing or additional teeth, are influenced by genetic factors (Yukta *et al*., 2024). The tooth size and shape are also influenced by environmental and epigenetic factors (Kondo & Manabe, 2016; Takahashi *et al*., 2007).

In dental anthropology, the phenetic variation of teeth has been studied through various approaches. This includes non-metric traits based on standardized "Arizona State University Dental Anthropology System" (ASUDAS) (Chowdhry *et al*., 2023; Popovici *et al*., 2022; Turner, 1991), metric analyses using 2D and 3D geometric morphometrics (Nicholson & Harvati, 2006; Popovici *et al*., 2023b; Yong *et al*., 2018), and linear measurements of tooth crown and root (Franco *et al*., 2021; Garn *et al*., 1979; Govindaram *et al*., 2018; Petraru *et al*., 2022; Popovici *et al*.; Roh *et al*., 2018; Zúñiga *et al*., 2021). Studies focusing on the linear measurements of tooth crown are usually aimed at comparative investigations on sexual dimorphism and metric variability (Heng *et al*., 2022; Yoo *et al*., 2016) between contemporary human groups (Alanazi *et al*., 2022; Daniele *et al*., 2020; Soundarya *et al*., 2021) and past ones (Peckmann *et al*., 2015; Petraru *et al*., 2022; Zorba *et al*., 2013). The mandibular canine exhibits significant sexual dimorphism, as do the posterior teeth, particularly the mandibular molars (Agrawal *et al*., 2015; El Sheikhi & Bugaighis, 2016; Soundarya *et al*., 2021). Several odontometric studied are based on linear measurements of tooth crown buccolingual diameter and mesiodistal diameter, while alternative measurements such as diagonal diameters and cervical diameters have also been employed (El Sheikhi & Bugaig his, 2016; Hillson *et al*., 2005; Manchanda *et al*., 2015).

Despite the abundance of studies on tooth linear metrics in past human populations, research on dental dimensional variability and sexual dimorphism of tooth crowns in Romanian samples remains limited (Petraru *et al*., 2020a; Petraru *et al*., 2022).

The aim of this study is to evaluate the crown dimension variability and sexual dimorphism of the second molar (M2) from a skeletal series dating back to the 16^{th}-19^{th} centuries discovered in Iași city, Romania. This preliminary odontometric study is based on variables such as mesiodistal (MD) and buccolingual (BL) diameters, crown area (CA), crown index (CI), and sexual dimorphism index (SDI).

MATERIALS AND METHODS

Materials. The dental sample is represented by maxillary and mandibular second molars (M2) (n = 113) belonging to human skeletons discovered during archaeological excavations executed at the "Vovidenia" Church and at the Historical Center (HC) – "Curtea Domnească", point "Sf. Atanasie", from Iași city, Romania

(Figure 1). The human remains discovered at "Vovidenia" Church were previously studied in terms of sex and age estimations, paleopathology, non-metric traits and dental wear (Groza *et al*., 2023; Groza *et al*., 2022; Petraru *et al*., 2023; Popovici *et al*., 2023a). Only a part of the excavated human remains discovered at the Historical Center (HC) – "Curtea Domnească", point "Sf. Atanasie", were included in this study, the sex and age at death estimation data being available from unpublished manuscript. The bioarchaeological material examined dates, according to the archaeological inventory, to 16th-17th centuries ("Vovidenia" Church), and to the 17th-19th centuries (HC – "Curtea Domnească", point "Sf. Atanasie") respectively.

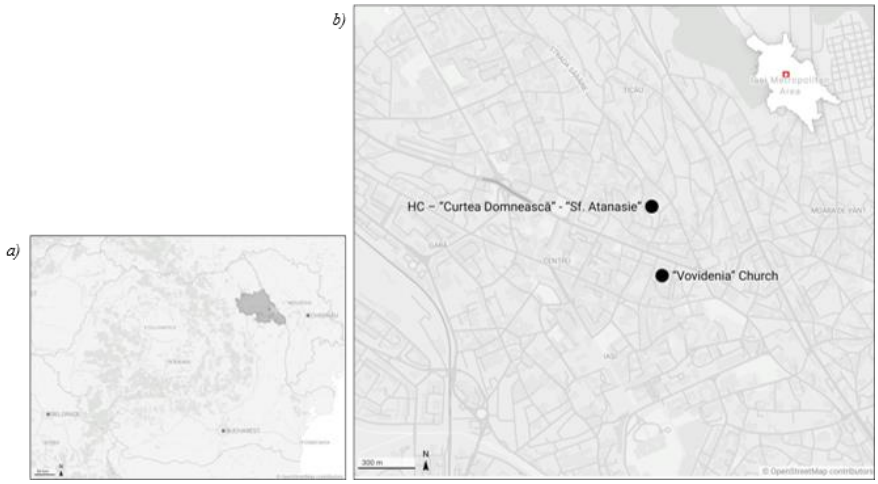

Figure 1: "Vovidenia" Church, and Historical Center (HC) – "Curtea Domnească", point "Sf. Atanasie": location in Iași County (a), and in Iași metropolitan area (b). Map source: Datawrapper: https://app.datawrapper.de

The second molar (M2) was chosen for this study due to several reasons: the prevalence of the teeth in skeletal series in comparison with the third molars (M3), which are often congenitally missing, unerupted or impacted. The first molar (M1 is less commonly used in morphometric linear studies due to its variable crown morphology (i.e., supplementary cusps), and its tendency to exhibit advanced occlusal wear. The sampling strategy for the dental material includes several criteria such as selecting the molars without pathologies and without antemortem and postmortem crown fractures.

Methods. *Odontometrics.* The teeth were cleaned using ethanol and then placed under a Carl Zeiss Stemi 508 stereomicroscope equipped with a digital camera. The molars were positioned in the specific anatomical position whether still in the dental alveoli or detached from the skull. To ensure accurate imaging, the molars were positioned under the stereomicroscope with the optical axis of the camera lens perpendicular to the cement-enamel junction plane of the teeth (Górka *et al*., 2015; Martín-Albaladejo *et al*., 2017). A millimeter scale was placed at the same height as the occlusal surface of the examined molar (Nowaczewska *et al*., 2023). Digital images of occlusal surfaces of the M2 molars were recorded,

processed and calibrated (in mm) using ImageJ software (Abràmoff *et al*., 2004). The buccolingual (BL) maximum crown diameter and mesiodistal (MD) maximum crown diameter were measured using ImageJ software. The MD diameter was defined as maximum width of the tooth crown in the mesiodistal plane, while the BL diameter represents the longest distance of the tooth crown in the buccolingual plane, perpendicular to the MD (Ghorbanyjavadpour *et al*., 2024; Petraru *et al*., 2022; Pilloud & Scott, 2020; Takahashi *et al*., 2007). In the dental samples where interproximal facets were identified, the MD diameter was estimated according to the method proposed by Wood and Abbott (1983). Along with the two variables (BL and MD), the crown index (CI = BL diameter x 100/MD diameter), and the crown area (CA = BL diameter x MD diameter) were used to describe the crown (Petraru *et al*., 2022). The sexual dimorphism index (SDI) was also calculated according to Zorba *et al*. (2011) (SDI = M-F/ F x 100; M – male mean value; F – females mean value).

Statistical analysis. Intra-observer error of dental measurements was assessed by using blind tests according to the methodology proposed by Górka *et al*. (2015). Normality distribution was computed using the Shapiro-Wilk test. Bivariate analysis, *t*-test, and Mann-Whitney tests, along with descriptive statistics were investigated by means of XLSTAT and PAST software (Hammer *et al*., 2001). Additionally, Pearson's and Spearman's tests were applied to investigate the correlations between the BL and MD variables. Discriminant analysis was employed to identify relationships between variables potentially associated with sexual distinction. The multivariate procedure involved the use of discriminant analysis on sexes using four variables (i.e., BL, MD, CA, CI) of the second molar (M2). Standardized discriminant functions were used to display the most discriminating variables between the sexes. Wilks' Lambda was used to test the significance of the discriminant function. Two discriminant functions (F1, F2) were calculated; the first one was applied to the mandibular second molar (M_2), and the second to the maxillary second molar (M^2). Statistical analysis was carried out using IBM SPSS Statistic, IBM Inc., version 29.0.2.0 (20) for Windows software package.

RESULTS AND DISCUSSION

Intra-observer error analysis shows no significant differences between measurements (BL: t = 0.01, p = 0.98, MD: 0.03, p = 0.97). In order to analyze together the dental material discovered during the two mentioned archaeological excavations, several features are highlighted. The "Vovidenia" Church and the Historical Center – "Curtea Domnească", point "Sf. Atanasie", are located close to each other, within the Iași metropolitan area, and they are chronologically close. Also, the data regarding the two diameters were plotted to illustrate their distribution (Figure 3), revealing overlapping dental data despite differences in sample sizes. Given these considerations, the dental samples from the two archaeological sites dating to the 16^{th}-17^{th} and 17^{th}-19^{th} centuries were pooled.

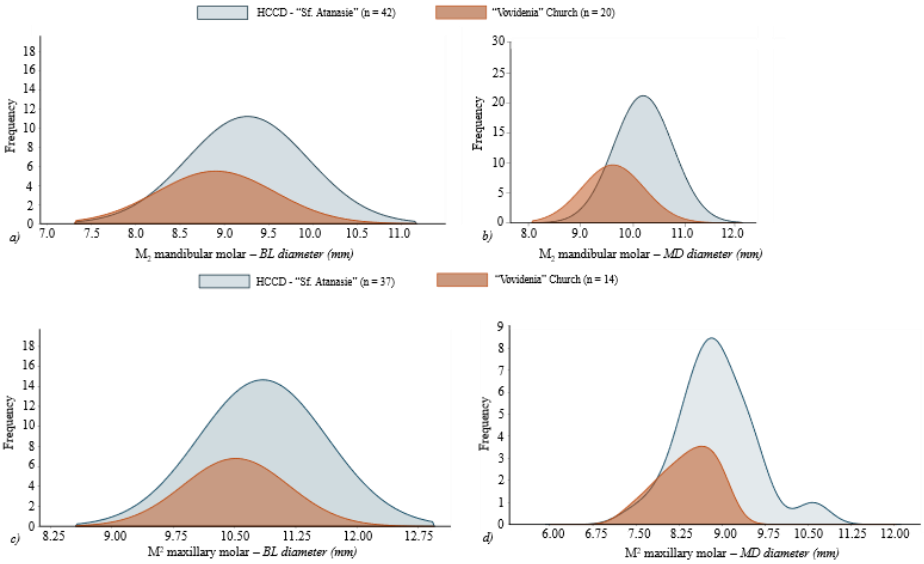
HCCD - "Sf. Atanasie" (n = 42)
"Vovidenia" Church (n = 20)
Frequency
a)
M_2 mandibular molar – *BL diameter (mm)*
b)
M_2 mandibular molar – *MD diameter (mm)*
HCCD - "Sf. Atanasie" (n = 37)
"Vovidenia" Church (n = 14)
c)
M^2 maxillary molar – *BL diameter (mm)*
d)
M^2 maxillary molar – *MD diameter (mm)*

Figure 2: Buccolingual (BL) and mesiodistal (MD) data distribution in the second mandibular molar (M2) crown, from "Vovidenia" Church and the Historical Center – "Curtea Domnească" (HCCD), point "Sf. Atanasie".

The MD and BL variables of the left and right mandibular and maxillary second molars (M2) were compared in order to assess potential asymmetry. The results showed no statistically significant differences (Table 1), therefore the left and right mandibular/ maxillary M2 molars were investigated simultaneously.

Table 1.
Test results for asymmetry between left and right mandibular (M_2) /maxillary (M^2) diameters in males and females (Diam – diameters, BL – buco-lingual diameter, MD – mesio-distal diameter).

Sex	Comparison between teeth	Diam	Data distribution	Test results
Females	M_2 right vs. M_2 left	*BL*	W = 0.95, p = 0.66, W = 0.94, p = 0.56	t test = 0.56, **p = 0.57**
		MD	W = 0.91, p = 0.22, W = 0.95, p = 0.67	t test = 0.53, **p = 0.60**
	M^2 right vs. M^2 left	*BL*	W = 0.89, p = 0.30, W = 0.97, p = 0.90	t test = 0.95, **p = 0.35**
		MD	W = 0.92, p = 0.94, W = 0.48, p = 0.48	t test = 1.69, **p = 0.10**
Males	M_2 right vs. M_2 left	*BL*	W = 0.93, p = 0.15. W = 0.98, p = 0.99	t test = 0.38, **p = 0.70**
		MD	W = 0.97, p = 0.90, W = 0.95, p = 0.56	t test = 0.25, **p = 0.80**
	M^2 right vs. M^2 left	*BL*	W = 0.94, p = 0.34, W = 0.95, p = 0.63	t test = 1.40, **p = 0.17**
		MD	W = 0.97, p = 0.85, W = 0.94, p = 0.43	t test = 1.89, **p = 0.06**

Descriptive statistics was performed by sex and position of the molar in skull (i.e., maxillary or mandibular). The median variable of the both BL and MD diameters in the female series shows lower values on both maxillary and mandibular molars to those in the male series (Figure 3). Also, the mean variable shows lower values in females (M_2: BL = 8.97 mm, MD = 9.9, M^2: BL = 10.62, MD = 8.53) in comparison with the male data series (M_2: BL = 9.24 mm, MD = 10.15, M^2: BL = 10.84, MD = 8.89) (Table 2). Although higher values are shown

in the male series for both median and mean measurements, no statistical differences were observed in the mandibular (BL: t = 1.45, p = 0.15, MD: t = 1.44, p = 0.15) and maxillary second molars (BL: t = 0.99, p = 0.32, MD: t = 1.94, p = 0.057) (Figure 3). The coefficient of variation (CV), defined as the ratio of the standard deviation to the arithmetic mean of the variable multiplied by 100, is used to evaluate the relative variation of a variable (Schrein, 2006; Wolsan *et al*., 2015). In females, the mandibular crown molar diameters show similar variability (BL: CV = 6.2, MD: CV = 6.61), whereas in males the BL shows higher variability (CV = 8.1) compared to the MD (CV = 6.37). Conversely, the maxillary crown variables show higher variability in males (BL: CV = 7.32, MD: CV = 8.68) than in females (BL: CV = 6.64, MD: CV = 4.45).

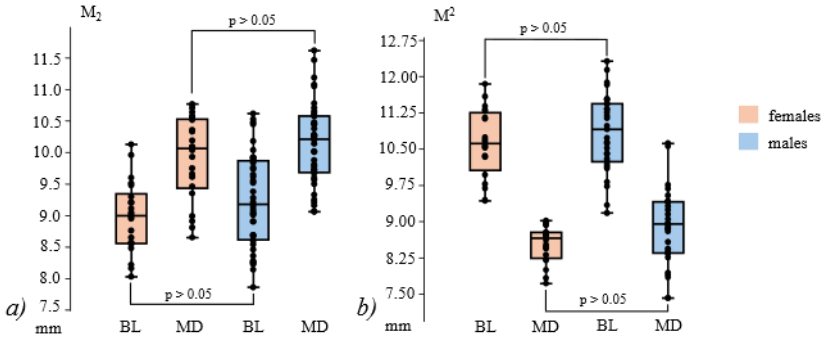

Figure 3: Distribution of dental crown metric data by sex in the second mandibular (a) and maxillary (b) molars.

Table 2.

Descriptive statistics of buccolingual (BL) and mesiodistal (ML) diameters in the second molars by position in skull and sex (BL – bucolingual diameter, MD – mesiodistal diameter, Std. er. – standard error, Var. – variance, Std. dev. – standard deviation, Coeff. Var. – coefficient of variance).

Variables	***M_2 mandibular molar diameters***				***M^2 maxillary molar diameters***			
	BL – females	*MD – females*	*BL – males*	*MD – males*	*BL – females*	*MD – females*	*BL – males*	*MD – males*
Mean	8.97	9.9	9.24	10.15	10.62	8.53	10.84	8.89
Std. er.	0.11	0.13	0.11	0.1	0.15	0.08	0.14	0.13
Var.	0.31	0.43	0.56	0.41	0.49	0.14	0.63	0.59
Std. dev.	0.55	0.65	0.74	0.64	0.7	0.38	0.79	0.77
Coeff. Var.	6.2	6.61	8.1	6.37	6.64	4.45	7.32	8.68

Pearson correlation analysis was conducted to examine the relationship between the two diameters based on sex and molar position in the jaws. In females, the two variables show a moderate correlation (r = 0.69) in the mandibular molars (Figure 4a), and a weak correlation (r = 0.29) in the second maxillary molars (Figure 4b). In the male mandibular molars, a strong correlation (r = 0.80) is highlighted between the two diameters (Figure 4c), while for the maxillary molars

the two variables show a weak correlation (r = 0.38) (Figure 4d). The coefficient of determination - R^2 indicates that the two diameters are correlated in 47% of the cases in the female mandibular molars, and 8% in the second maxillary molars (Figure 4a, b). For the male series, the variable has higher values in both mandibular (64%) and maxillary (15%) second molars, compared to the female series (Figure 3c, d).

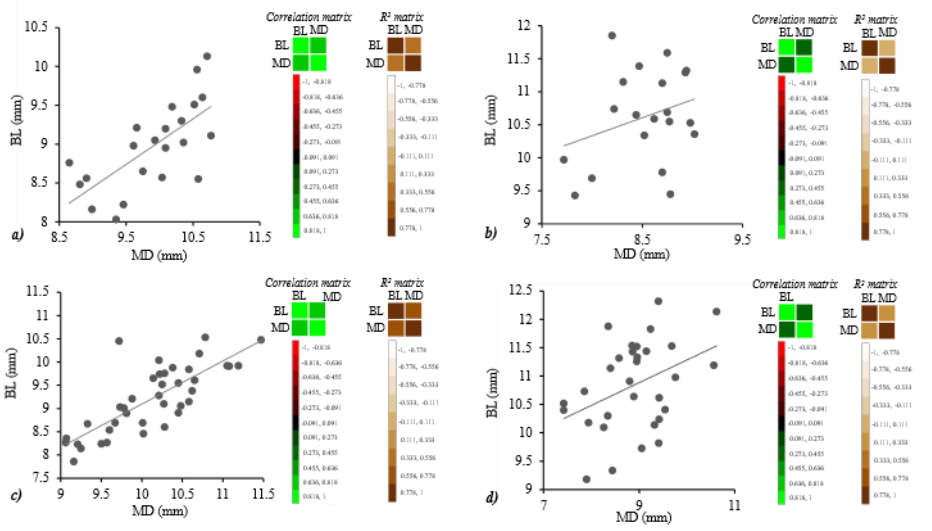

Figure 4: Bivariate analysis of the BL and MD diameters in the M2 molar teeth in the female and male series: a – M_2 mandibular teeth in female series, b – M^2 maxillary teeth in female series, c – M_2 mandibular teeth in male series, d – M^2 maxillary teeth in male series (BL – bucolingual diameter, MD – mesiodistal diameter, R^2 – coefficient of determination).

The crown index (CI) can be used to obtain data regarding the crown proportions (Harizanova & Baltadjiev, 2023; Kondo *et al*., 2005). The results regarding crown index are illustrated in Figure 5 by histogram plots. The CI data show a non-normal distribution in the male mandibular second molars (W = 0.98, p = 0.009), and a normal distribution in females (W = 0.98, p = 0.99) and maxillary second molars (females: W = 0.98, p = 0.99, males: W = 0.95, p = 0.23). The comparison of crown index values by sex did not show any statistical difference (M2: Mann-Whitney U = 0.09, p = 0.92; t-test: t = 0.74, p = 0.46). Similarly, no significant differences were found when comparing crown area (CA) values by sex for both second maxillary molars (t = 1.83, p = 0.07) and second mandibular molars (t = 1.57, p = 0.12).

Sexual dimorphism refers to the traits' differences between male and female of the same species, which is also evident in teeth, especially in size (Dahal *et al*., 2021; Gandhi *et al*., 2017; Heng *et al*., 2022). The sexual dimorphism index (SDI) shows similar values in the second mandibular molar (M_2) (BL SDI = 2.95%, MD SDI = 2.51%), while in the maxillary molars the MD diameter (4.24%) has a higher dimorphic role comparative with the BL diameter (2.04%). As expected, the SDI values are higher for the CA in both maxillary (6.54%) and mandibular

M2 (5.67%) molars, being the multiplication result of the two diameters. A less dimorphic role is attributed to CI index in the second mandibular molar (0.25%), whereas a negative percentage was observed for the second maxillary molar (- 1.72%). According to Zorba *et al*. (2011), a negative CI value indicates larger dimensions in female teeth, while a positive value indicates larger dimensions in male teeth. Values close to zero suggest minimal or no sexual dimorphism (Mona *et al*., 2023; Zorba *et al*., 2011 (Mona *et al*., 2023; Zorba *et al*., 2011).

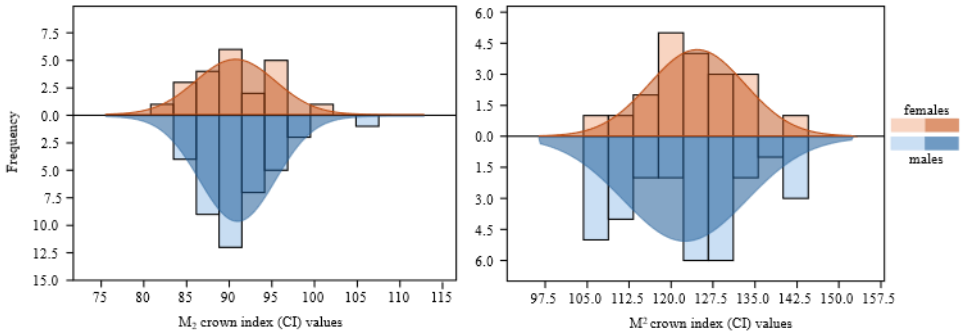

Figure 5: Distribution of second molar crown index values by sex.

To explore the relationship of the four variables (i.e., BL, MD, CA, CI) in the sexual dimorphism of the second molar crown, the discriminant analysis was used. The precision of the discriminant function coefficient for the included predictor variables in this study is presented in Table 3. The discriminant analysis identified the most effective discriminant functions based on the highest univariate discriminant coefficients. The variables exposed to the test of significance (Wilks' lambda) shown for the two functions a p value > 0.05. This outcome supports the acceptance of the null hypothesis, signifying that the functions lack discriminatory ability (Table 3).

Table 3.
Wilk's lambda: the significance among the predictor variables.

Functions	Wilk's Lambda	Chi-square	df	p -value
1	0.849	3.841	3	0.279
2	0.798	5.422	4	0.247

Table 4 shows the variables in each function that contributed to stepwise discriminant analysis. They are expressed by the standardized coefficients, while unstandardized coefficients expressed discriminant function score (y). The matrix structure reveals the relationship between the variables entered and discriminant functions, with group centroids indicating the mean discriminant score for each sex and separated by a sectioning point. According to Zorba *et al*. (2013), the form of equations is: *y= b1*x1+b2*x2+b3*x3+a,* where*:* b1-bi: unstandardized coefficient, x1-xi: value of each variable; a: constant value; i: number of predictor variables.

There is to note the unequal contribution of the variables involved in the two functions. Due to the low tolerance, CI variable was not used in the analysis for F1, resulting in a minimal contribution to the expression of the discriminating function (minimum tolerance level <0.001).

Table 4.
Stepwise discriminant function coefficients.

Functions	Unstandardized coefficients	Structure matrix	Standardized Coefficients	Group centroid		Sectioning point
				Male	Female	
F1: M_2 mandibular molar						
BL	-1.148	0.972	-0.672	0.287	-0.573	-0.14337
MD	-1.962	0.788	-1.089			
CA	0.249	0.977	2.570			
IC		0.375				
(Constant)	6.825					
F2: M^2 maxillary molar						
BL	-13.806	0.379	-10.848	0.39	-0.603	-0.1065
MD	5.208	0.471	3.990			
CA	0.580	0.523	7.512			
IC	0.802	-0.083	8.405			
(Constant)	-50.894					

This preliminary study presents the dimensional variability of the second molar (M2) crown in a skeletal series from the 16th-19th centuries in the city of Iași, Romania. Crown variability was investigated through BL, MD, CA, CI and SDI variables. Comparing our findings with data from similar studies, higher mean values of the two diameters in males and females was observed in a skeletal series from the 13th to 17th centuries in Northeastern Romania (Petraru *et al*., 2022). Furthermore, Vodanović *et al*. (2007) reported higher mean values for both maxillary and mandibular second molars in males and females in a medieval skeletal series from Croatia.

In this study the CV is used to assess variability degree. Our CV% results regarding the male maxillary molars are comparable (BL CV: 7.32 *vs.* 7.69, MD CV: 8.68 *vs.* 8.82) with those obtained by Petraru *et al*. (2022) in the medieval teeth samples from Romania. Higher CV% values were obtained in the previously mentioned study in the female maxillary teeth, in the BL second mandibular molars (M_2), as well as in the MD second mandibular molars (M2) in males, in comparison with the values obtained in this study. In contrast, in this study a higher value was highlighted in the male mandibular molars for the BL variable (CV = 8.1). The CA index mean values obtained in this studies are lower compared to those reported by Petraru *et al*. (2022), and Pajević and Glišić (2017) for both mandibular and maxillary second molar crown.

Regarding the sexual dimorphism, in our study the SDI obtained values for the four variables are not supported by statistical tests. Although the univariate analysis does not expressly highlight any variable with importance in distinguishing sexes, the discriminant analysis still indicates new relationships between variables, despite the lack of statistical significance.

The discriminant functions offered a moderate classification accuracy for sex evaluation. The cross-validated classification of the examined Discriminant Functions is 63% (F1) and 64.3% (F2), respectively. The values of the degree of accuracy of the discriminant functions are lower than those obtained for the maxillary second molar in the medieval population of Iași (72.73%), and relatively similar for the mandibular molar (68%) (Petraru *et al*., 2022). A different contribution of the 4 variables in establishing the discriminant functions was noted. If in Function 2, calculated for maxillary molars, all four variables are involved (Table 3), in Function 1 only three variables (i.e., BL, MD and CA) are deemed more important for classification. The CA variable, according to the standardized coefficient (Table 4), increases the probability of belonging to the group associated with the discriminant function, unlike the other three that record negative values for this coefficient. The CI and CA are the predictor variables with a large contribution in establishing the function for the second maxillary molar (M^2), unlike BL, which shows a minor contribution.

Many studies have used MD and BL of molars for sex discrimination (Acharya & Mainali, 2008; Ateş *et al*., 2006; Zorba *et al*., 2011; Zorba *et al*., 2013). This finding could potentially be replicated in the present study, albeit with caution (due to the statistical significance test). Although the univariate analysis did not show a dimorphic character, the predictor variables could still be included in discriminant functions.

A low accuracy of discriminant functions, similar with that of the present study, was obtained for a Greek modern skeletal collection, using BL and MD of mandibular molar for discriminant analysis (Zorba *et al*., 2012). For the variables of maxillary molar, a higher accuracy was obtained in the mentioned study compared to that of the present study (73.8% and 64%, respectively). It is also worth noting the different degree of contribution of the two variables in the two discriminant functions, compared to other studies (Petraru *et al*., 2022; Zorba *et al*., 2012). If Zorba *et al*. (2012) indicates that the MD variable at the level of both mandibular and maxillary M2 molars does not show differences in contribution to the discriminant functions, in the case of the present study, the MD variable displays a greater significance in the case of the function for the second maxillary molar (M^2). The important role of BL and MD in defining the discriminant functions for the maxillary molar was also observed in the medieval population from the city of Iași (Petraru *et al*., 2022). Contrary to Ateş *et al*. (2006), we found that the second maxillary molar provides better accuracy than the second mandibular molar, primarily influenced by CA and CI, rather than MD and BL measurements.

The results regarding the low contribution of BL in discrimination compared to MD are consistent with other studies (Acharya & Mainali, 2008; Adams & Pilloud, 2019; Potter *et al*., 1981). Conversely, other authors reported MD to be more effective for sex estimation (Shireen & Ara, 2016).

CONCLUSIONS

This preliminary study is based on linear metrics of the M2 dental crown in human skeletal series of 16^{th}-19^{th} centuries from the city of Iași (Romania).

A higher variability was highlighted in the male dental series for the MD variable in the second mandibular molars (M_2), and for both MD and BL variables in the second maxillary molars (M^2). The two diameters exhibited weaker correlation in the second maxillary molars of both the male and female dental series. No statistical differences were obtained when the crown variables were compared by sex. The results of the discriminant analysis, although statistically insignificant, reveal new aspects regarding the covariations of the M2 variables in sexual dimorphism, highlighting additional variables like CA and CI in the discriminant functions.

These results represent a new viewpoint for the following studies, and they will be integrated in a comprehensive analysis regarding the past human population from medieval and premodern city of Iași through dental crown metrics.

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REFERENCES

Abràmoff, M. D., Magalhães, P. J., Ram, S. J. 2004. *Image processing with ImageJ*. Biophotonics International, ***11(7)***, 36–42.

Acharya, A. B., Mainali, S. 2008. *Sex discrimination potential of buccolingual and mesiodistal tooth dimensions*. Journal of forensic sciences, ***53(4)***, 790–792.

Adams, D. M., Pilloud, M. A. 2019. *Sex estimation from dental crown and cervical metrics in a contemporary Japanese sample*. Forensic Anthropology, ***2(4)***, 1–11.

Agrawal, A., Manjunatha, B. S., Dholia, B., Althomali, Y. 2015. *Comparison of sexual dimorphism of permanent mandibular canine with mandibular first molar by odontometrics*. Journal of Forensic Dental Sciences, ***7(3)***, 238.

Alanazi, A. A., Almutair, A. M., Alhubayshi, A., Almalki, A., Naqvi, Z. A., Alassaf, A., Almulhim, B., Alghamdi, S. A., Mallineni, S. K. 2022. *Morphometric analysis of permanent canines: preliminary findings on odontometric sex dimorphism*. International Journal of Environmental Research and Public Health, ***19(4)***, 2109.

Ateş, M., Karaman, F., Işcan, M. Y., Erdem, T. L. 2006. *Sexual differences in Turkish dentition*. Legal Medicine, ***8(5)***, 288–292.

Bautista, J. 2023. *Pilot study to assess age-at-death by pulp/tooth area ratio method using tooth sections and radiographs on an archaeological skeletal sample with dental wear*. Journal of Archaeological Science: Reports, ***50***, 104068.

Bertrand, B., Cunha, E., Bécart, A., Gosset, D., Hédouin, V. 2019. *Age at death estimation by cementochronology: Too precise to be true or too precise to be accurate?* American Journal of Physical Anthropology, ***169(3)***, 464–481.

Buikstra, J., Ubelaker, D. 1994. *Standards for Data Collection from Human Skeletal Remains: Research Seminar* Fayetteville: Arkansas Archaeological Survey Research Series, No. 44.

Caruso, A., Nikita, E. 2024. *Dental diseases and dental wear as a proxy for dietary patterns in Hellenistic-early Roman Menainon, Sicily*. International Journal of Paleopathology, ***44***, 10–19.

Chowdhry, A., Popli, D. B., Sircar, K., Kapoor, P. 2023. *Study of twenty non-metric dental crown traits using ASUDAS system in NCR (India) population*. Egyptian Journal of Forensic Sciences, ***13(1)***, 8.

Dahal, S., Baral, R., Gupta, S. P., Chaudhary, G. K. 2021. *Sex determination using mesiodistal width of permanent maxillary molar*. Journal of Kathmandu Medical College, 213–217.

Daniele, G., Matilde, S.-S. A., María, M., Rafael, R. V., Milagros, A. M. 2020. *Sex estimation by tooth dimension in a contemporary Spanish population*. Forensic Science International, ***317***, 110549.

El Sheikhi, F., Bugaighis, I. 2016. *Sex discrimination by odontometrics in Libyan subjects*. Egyptian Journal of Forensic Sciences, ***6(2)***, 157–164.

Esclassan, R., Grimoud, A.-M., Ruas, M., Donat, R., Sevin, A., Astie, F., Lucas, S., Crubezy, E. 2009. *Dental caries, tooth wear and diet in an adult medieval (12th–14th century) population from Mediterranean France*. Archives of oral biology, ***54(3)***, 287–297.

Forshaw, R. 2024. *Windows into the past: recent scientific techniques in dental analysis*. British Dental Journal, ***236(3)***, 205–211.

Franco, S. F., Azevedo, Á., Matos, V. M., Mongiovi, D., Teixeira, A. 2021. *Odontometric parameters in human mandibular molars for sex estimation in a forensic context*. Dental Anthropology Journal, ***34(2)***.

Gandhi, N., Jain, S., Kahlon, H., Singh, A., Gambhir, R. S., Gaur, A. 2017. *Significance of mandibular canine index in sexual dimorphism and aid in personal identification in forensic odontology*. Journal of forensic dental sciences, ***9(2)***, 56.

García-González, R., Carretero, J. M., Richards, M. P., Rodríguez, L., Quam, R. 2015. *Dietary inferences through dental microwear and isotope analyses of the Lower Magdalenian individual from El Mirón Cave (Cantabria, Spain)*. Journal of Archaeological Science, ***60***, 28–38.

Garn, S. M., Cole, P. E., Van Alstine, W. L. 1979. *Sex discriminatory effectiveness using combinations of root lengths and crown diameters*. American journal of physical anthropology, ***50(1)***, 115-117.

Ghorbanyjavadpour, F., Jamali, K., Roayaei Ardakani, M., Rakhshan, V. 2024. *Morphometric variations and nonmetric anatomical traits or anomalies of the primary molar teeth, plus the molars' size thresholds for sex identification*. BMC Oral Health, ***24(1)***, 1–15.

Górka, K., Romero, A., Pérez-Pérez, A. 2015. *First molar size and wear within and among modern hunter-gatherers and agricultural populations*. Homo – Journal of Comparative Human Biology, ***66(4)***, 299–315.

Govindaram, D., Bharanidharan, R., Ramya, R., Rameshkumar, A., Priyadharsini, N., Rajkumar, K. 2018. *Root Length: As a determinant tool of sexual dimorphism in an ethnic Tamil population*. Journal of Forensic Dental Sciences, ***10(2)***, 96.

Groza, V.-M., Bacumenco-Pîrnău, L., Ciorpac-Petraru, O.-M., Bejenaru, L., Popovici, M. 2023. *Dental enamel hypoplasia in the skeletal series exhumed from the "Vovidenia" Church in Iași (16th -17th centuries)*. Memoirs of the Scientific Sections, ***Tome XLVI***, 293–304.

Groza, V.-M., Bacumenco-Pîrnău, L., Cordoș, C., Popovici, M., Bejenaru, L. 2022. *A preliminary bioanthropological study of a 16th–17th century skeletal sample, discovered at the "Vovidenia" church in Iași (Romania)*. Memoirs of the Scientific Sections of the Romanian Academy, ***XLV***, 181–200.

Hammer, Ø., Harper, D., Ryan, P. 2001. *PAST-Palaeontological statistics software package for education and data analysis*. Palaeontologia electronica, ***4(07)***, 9.

Harizanova, Z., Baltadjiev, A. 2023. *Anthropological study of dental indices in Bulgarian population*. Folia Medica, ***65(4)***, 659–663.

Heng, D., Manica, S., Franco, A. 2022. *Forensic Dentistry as an Analysis Tool for Sex Estimation: A Review of Current Techniques*. Research and Reports in Forensic Medical Science, 25–39.

Hillson, S., Fitzgerald, C., Flinn, H. 2005. *Alternative dental measurements: proposals and relationships with other measurements*. American Journal of Physical Anthropology, ***126(4)***, 413–426.

Kondo, S., Manabe, Y. 2016. *Analytical methods and interpretation of variation in tooth morphology*. Journal of Oral Biosciences, ***58(3)***, 85–94.

Kondo, S., Townsend, G. C., Yamada, H. 2005. *Sexual dimorphism of cusp dimensions in human maxillary molars*. American Journal of Physical Anthropology, ***128(4)***, 870–877.

Liappis, E., Karamani, P., Papadeli, C. 2024. *Dental anthropology and forensics: Answers to questions related to our past: Review of the literature*. Balkan Journal of Dental Medicine, ***28(1)***, 27–32.

Manchanda, A. S., Narang, R. S., Kahlon, S. S., Singh, B. 2015. *Diagonal tooth measurements in sex assessment: A study on North Indian population*. Journal of forensic dental sciences, ***7(2)***, 126.

Martín-Albaladejo, M., Martinón-Torres, M., García-González, R., Arsuaga, J.-L., De Castro, J. B. 2017. *Morphometric analysis of Atapuerca-Sima de los Huesos lower first molars*. Quaternary International, ***433***, 156–162.

Mona, A., Socolov, R., Covali, R., Stan, C. D., Crauciuc, E., Popovici, D., Stan, C. I., Fawzy, A., Socolov, D., Davoudmanesh, Z. 2023. *Sexual dimorphism in the buccolingual dimensions of permanent anterior teeth in the young Iranian population*. Maedica, ***18(2)***, 271.

Nicholson, E., Harvati, K. 2006. *Quantitative analysis of human mandibular shape using three-dimensional geometric morphometrics*. American Journal of Physical Anthropology, ***131(3)***, 368–383.

Nikita, E. 2020. *Biodistance studies in the Eastern Mediterranean and Middle East: An overview and future prospects*. Journal of Archaeological Science: Reports, ***34***, 102647.

Nowaczewska, W., Górka, K., Cieślik, A., Patyk, M., Zaleska-Dorobisz, U. 2023. *The assessment of the relationship between the traits of temporal muscle and the massiveness of the supraorbital region of the Homo sapiens crania including the influence of the neurocranial shape and size of the occlusal surface of the upper molars–preliminary study*. Anthropological Review, ***86(3)***, 67–86.

Pajević, T., Glišić, B. 2017. *Dental occlusion analysis in the Mesolithic–Neolithic Age, Bronze Age, and Roman to Medieval times in Serbia: Tooth size comparison in skeletal samples*. Archives of Oral Biology, ***77***, 44–50.

Parsons, C. L., Mountain, R. V., Jacobsson, K., Bidlack, F. B., Lehmann, L. S., Dunn, E. C. 2024. *Cultural diversity of traditions for the disposal of exfoliated teeth: Implications for researchers*. Community Dentistry and Oral Epidemiology, https://doi.org/10.1111/cdoe.12928.

Peckmann, T. R., Meek, S., Dilkie, N., Mussett, M. 2015. *Sex estimation using diagonal diameter measurements of molar teeth in African American populations*. Journal of Forensic and Legal Medicine, ***36***, 70–80.

Petraru, O.-M., Bejenaru, L., Groza, V.-M., Popovici, M. 2020a. *Dimensional variability of the human second molar (M2) in Bronze Age populations from North-East Romania*. Revista de Arheologie, Antropologie și Studii Interdisciplinare (RAASI)***(2)***, 101–109.

Petraru, O.-M., Groza, V.-M., Bejenaru, L., Popovici, M. 2022. *Dimension variability of the M2 human molar teeth: comparisons between prehistoric and medieval samples*. European Journal of Anatomy, 371–386.

Petraru, O.-M., Groza, V.-M., Lobiuc, A., Bejenaru, L., Popovici, M. 2020b. *Dental microwear as a diet indicator in the seventeenth-century human population from Iasi City, Romania*. Archaeological and Anthropological Sciences, ***12(8)***, 1–13.

Petraru, O.-M., Popovici, M., Groza, V.-M., Bacumenco-Pîrnău, L., Cordoș, C., Bejenaru, L. 2023. *Dental Macrowear Evaluation of the Human Skeletal Sample Discovered at the "Vovidenia" Church in Iași (România) 16th-17th Centuries*. Arheologia Moldovei, ***XLVI***, 238-252.

Pilloud, M. A., Edgar, H. J., George, R., Scott, G. R. (2016). Dental morphology in biodistance analysis. In M. A. Pilloud, J. T. Hefner (Eds.), *Biological distance analysis: Forensic and bioarchaeological perspectives*. London, UK: Elsevier, pp. 109–133.

Pilloud, M. A., Scott, G. R. (2020). Dentition in the estimation of sex. In A. R. Klales (Ed.), *Sex Estimation of the Human Skeleton*. San Diego: Elsevier, pp. 149–169.

Popovici, M., Bacumenco-Pîrnău, L., Petraru, O.-M., Bejenaru, L., Groza, V.-M. 2023a. *Dental non-metric traits in human skeletons of 16th-17th centuries discovered at Vovidenia church from Iași city (Romania)*. Annuaire Roumain d'Anthropologie, ***60***, 3–14.

Popovici, M., Groza, V.-M., Bejenaru, L., Petraru, O.-M. 2021. *Non-metric variation of the lower second molar (M2) in the 17th century human population from Iaşi city (Romania)*. Annuaire Roumain d'Anthropologie, ***58***, 13–23.

Popovici, M., Groza, V.-M., Bejenaru, L., Petraru, O.-M. 2022. *Non-metric traits of human upper first and second molars in a skeletal sample from the Mausoleum Crypt of the First World War heroes in Iași, Romania*. Memoirs of the Scientific Sections of the Romanian Academy, ***45***, 201–2015.

Popovici, M., Groza, V.-M., Bejenaru, L., Petraru, O.-M. 2023b. *Dental morphological variation in Chalcolithic and Bronze Age human populations from North-Eastern Romania*. Annals of Anatomy-Anatomischer Anzeiger, ***245***, 152015.

Popovici, M., Groza, V. M., Bejenaru, L., Petraru, O. M. *Geometric morphometrics of the second molar teeth within the human population from the late medieval city of Iași, Romania*. Archaeometry, ***64(6)***, 1479–1498.

Potter, R. H. Y., Alcazaren, A. B., Herbosa, F. M., Tomaneng, J. 1981. *Dimensional characteristics of the Filipino dentition*. American Journal of Physical Anthropology, ***55(1)***, 33–42.

Pradeep, L., Kokila, G., Gopinathan, P. A., Guruswamy, S., Nazir, S. H., Chatterjee, A. 2021. *Age estimation with cemental annulation using light, phase contrast and polarized microscopy*. Journal of Microscopy and Ultrastructure, ***9(2)***, 55–60.

Roh, B.-Y., Lee, W.-J., Ryu, J.-W., Ahn, J.-M., Yoon, C.-L., Lee, S.-S. 2018. *The application of the Kvaal method to estimate the age of live Korean subjects using digital panoramic radiographs*. International journal of legal medicine, ***132***, 1161–1166.

Schmidt, C. W. (2018). Dental macrowear and microwear. In W. Trevathan (Ed.), *The International Encyclopedia of Biological Anthropology* (Vol. 3). UK: John Wiley & Sons, pp. 1-4.

Schrein, C. M. 2006. *Metric variation and sexual dimorphism in the dentition of Ouranopithecus macedoniensis*. Journal of human evolution, ***50(4)***, 460–468.

Shireen, A., Ara, S. A. 2016. *Odontometric analysis of permanent maxillary first molar in gender determination*. Journal of forensic dental sciences, ***8(3)***, 145.

Snoddy, A. M. E., Shaw, H., Newman, S., Miszkiewicz, J. J., Stewart, N. A., Jakob, T., Buckley, H., Caffell, A., Gowland, R. 2024. *Vitamin D status in post-medieval Northern England: Insights from dental histology and enamel peptide analysis at Coach Lane, North Shields (AD 1711–1857)*. Plos one, ***19(1)***, e0296203.

Soundarya, N., Jain, V. K., Shetty, S., Akshatha, B. 2021. *Sexual dimorphism using permanent maxillary and mandibular incisors, canines and molars: An odontometric analysis*. Journal of Oral and Maxillofacial Pathology, ***25(1)***, 183–188.

Takahashi, M., Kondo, S., Townsend, G. C., Kanazawa, E. 2007. *Variability in cusp size of human maxillary molars, with particular reference to the hypocone*. Archives of Oral Biology, ***52(12)***, 1146–1154.

Turner, C. I. (1991). Scoring procedures for key morphological traits of the permanent dentition: the Arizona State University dental anthropology system. In M. A. Kelley, C. S. Larsen (Eds.), *Advances in dental anthropology*. New York: Wiley-Liss, pp. 13–31.

Vodanović, M., Demo, Ž., Njemirovskij, V., Keros, J., Brkić, H. 2007. *Odontometrics: a useful method for sex determination in an archaeological skeletal population?* Journal of Archaeological Science, ***34(6)***, 905–913.

Walsh, S. 2022. *Early evidence of extra-masticatory dental wear in a Neolithic community at Bestansur, Iraqi Kurdistan*. International Journal of Osteoarchaeology, ***32***, 1264–1274.

Wasterlain, S., Neves, M., Ferreira, M. 2016. *Dental modifications in a skeletal sample of enslaved Africans found at Lagos (Portugal)*. International Journal of Osteoarchaeology, ***26(4)***, 621–632.

Wolsan, M., Suzuki, S., Asahara, M., Motokawa, M. 2015. *Tooth size variation in pinniped dentitions*. PLoS One, ***10(8)***, e0137100.

Wood, B., Abbott, S. 1983. *Analysis of the dental morphology of Plio-pleistocene hominids. I. Mandibular molars: crown area measurements and morphological traits*. Journal of Anatomy, ***136(Pt 1)***, 197.

Xia, J., Zheng, J., Huang, D., Tian, Z. R., Chen, L., Zhou, Z., Ungar, P. S., Qian, L. 2015. *New model to explain tooth wear with implications for microwear formation and diet reconstruction*. Proceedings of the National Academy of Sciences, ***112(34)***, 10669–10672.

Yong, R., Ranjitkar, S., Lekkas, D., Halazonetis, D., Evans, A., Brook, A., Townsend, G. 2018. *Three-dimensional (3D) geometric morphometric analysis of human premolars to assess sexual dimorphism and biological ancestry in Australian populations*. American journal of physical anthropology, ***166(2)***, 373–385.

Yoo, H.-I., Yang, D.-W., Lee, M.-Y., Kim, M.-S., Kim, S.-H. 2016. *Morphological analysis of the occlusal surface of maxillary molars in Koreans*. Archives of Oral Biology, ***67***, 15–21.

Yukta, H., Augustine, D., Sowmya, S. 2024. *Effect of Geographic Variation in Bioarcheology: A Forensic Odontology Perspective*. The Journal of Contemporary Dental Practice, ***25(1)***, 1–2.

Zorba, E., Moraitis, K., Eliopoulos, C., Spiliopoulou, C. 2012. *Sex determination in modern Greeks using diagonal measurements of molar teeth*. Forensic Science International, ***217(1-3)***, 19–26.

Zorba, E., Moraitis, K., Manolis, S. K. 2011. *Sexual dimorphism in permanent teeth of modern Greeks*. Forensic Science International, ***210(1-3)***, 74–81.

Zorba, E., Spiliopoulou, C., Moraitis, K. 2013. *Evaluation of the accuracy of different molar teeth measurements in assessing sex*. Forensic Science, Medicine and Pathology, ***9(1)***, 13–23.

Zúñiga, M. H., Viciano, J., Fonseca, G. M., Soto-Álvarez, C., Rojas-Torres, J., López-Lázaro, S. 2021. *Correlation coefficients for predicting canine diameters from premolar and molar sizes*. Journal of Dental Sciences, ***16(1)***, 186–194.

TABLES AND FIGURES

Table 1.

Test results for asymmetry between the left and right mandibular (M_2) /maxillary (M^2) diameters in male and female series (Diam – diameters, BL – buco-lingual diameter, MD – mesio-distal diameter).

Table 2.

Descriptive statistics of bucco-lingual (BL) and mesio-distal (ML) diameters in the M2 molars by position in skull and sex (BL – buco-lingual diameter, MD – mesio-distal diameter, Std. er. – standard error, Var. – variance, Std. dev. – standard deviation, Coeff. Var. – coefficient of variance).

Table 3.

Wilk's lambda: the significance among the predictor variables.

Table 4.

Stepwise discriminant function coefficients.

Figure 1: "Vovidenia" Church, and Historical Center (HC) – "Curtea Domnească", point "Sf. Atanasie": location in Iași County (a), and in Iași metropolitan area (b). Map source: Datawrapper: https://app.datawrapper.de

Figure 2: Bucco-lingual (BL) and mesio-distal (MD) data distribution in the M2 molar crown, from "Vovidenia" Church and the Historical Center – "Curtea Domnească" (HCCD), point "Sf. Atanasie".

Figure 3: Dental crown metric data distribution by sex in mandibular (a) and maxillary M2 molars (b).

Figure 4: Bivariate analysis of the BL and MD diameters in the M2 molar teeth in the female and male series: a – M_2 mandibular teeth in female series, b – M^2 maxillary teeth in female series, c – M_2 mandibular teeth in male series, d – M^2 maxillary teeth in male series (BL – buco-lingual diameter, MD – mesio-distal diameter, R^2 – coefficient of determination).

Figure 5: Distribution of M2 molar crown index values by sex.

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ANTHROPOLOGICAL ANALYSIS OF A PADEA-PANAGHIURSKII-KOLONII INCINERATION GRAVE FROM LETCA VECHE, GIURGIU COUNTY, ROMANIA

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In March 2023, in a field outside Letca Veche, Giurgiu County, Romania, some metal detector users discovered a cremation burial from the La Tène period (Ist century BC). After the discovery was announced, a team led by Ana Ilie from the *Curtea Domnească National Museum Complex* in Târgoviște excavated the burial, which had an inventory typical of this type of cremation grave, consisting of a small vessel, a belt buckle, a fibula, two spears and two sicas. The bones were taken to the *Francisc I. Rainer Institute of Anthropology* in Bucharest, where they were subjected to an anthropological analysis by Costin Șendroiu. The purpose of this article is firstly to present the results of the anthropological analysis of the cremated human bones and secondly to integrate the find into the context of the La Tène cremation burials in this area.

Keywords: La Tène, funerary practices, Padea-Panaghiurskii-Kolonii, incineration, anthropological analysis.

INTRODUCTION

This article is possible due to the awareness of some metal detection associations from Romania to adhere to the legal requirements. In March 2023, the Heritage Council of Giurgiu County and the Giurgiu County Museum were notified of the discovery of a grave with weapons in the agricultural territory of the Letca Veche village (Fig. 1–2).

The archaeological evaluation of the find, more precisely the documentation and the extraction of material samples in accordance with Romanian archaeological standards and procedures, was carried out by a team of archaeologists from the "Curtea Domnească" National Museum Complex from Târgoviște.

This "accidental" discovery with a happy ending which involved an archaeological diagnostic intervention, allowed the acquisition of archaeological information relevant for the study of the La Tène period and for the protection of the identified archaeological sites.

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DISCOVERY CONTEXT

The archaeological intervention managed to recover the materials and to assess the archaeological situation of the area in question (Fig. 3).

In order to evaluate the find, a trench (S.I/2023) of 4 square meters was drawn. The result of the investigation was the discovery of an incineration grave with martial inventory.

The burial was located 20–30 m from the north-eastern periphery of the first core of a newly identified settlement and about 50–60 m from the second core, in an unconstructed area. This new archaeologial site is located on the left side of the Glavacioc river, in an area strongly fragmented by its tributaries and separated from the Letca Veche-Tătăr settlement by a meander (Fig. 4)

The inventory of the grave consisted of 5 iron items, 1 composite metallic object, small fragments of burnt bones and a vessel.

In S.I/2023, at a depth of -0.30 m from ground level, the first weapon came to light, a *sica*-type dagger. The *sica* was struck in the middle by the blade of a plough, as the soil had been ploughed to a depth of -0.40 m, destroying the top of the burial pit. At a depth of -0.40 m, the outline of the pit could be recognized, which was relatively round with a diameter of appr. 0.60 m.

Under the first *sica*, very small, burnt, white bone fragments began to be seen. The first dagger was placed over two spearheads, with their sharp ends pointing in opposite directions. To the west of the weapons there was a complete funerary vessel, recovered with the earth inside (Fig. 5–6). During the cleaning and restoration work in the laboratory, the small pot was found to contain no bones, ash or other archaeological materials.

Among the two spearheads, items 2 and 3, a small bundle of bones was observed lying NW-SE above piece no. 4, another *sica*-type dagger (Fig. 7).

Below it, in the east, was another bundle of bones and a 5th metallic inventory item, which was badly deformed by fire but still contained enough elements to be typologically determined. This object is a metallic composite piece, a copper buckle that has been bent and deformed by fire. Attached to it is a belt fastener, an iron buckle. Several fragments of a white, translucent material, probably glass, could be observed close to the buckle, wedged in the fold of the crease, the remains of a decorative element. The buckle consists of a thin, rectangular sheet of copper about 10 cm wide, tapering at the point where the clasp hook is formed.

The soil from the cremation pit was fully sampled in order to float it and recover the osteological remains. From the pack sampled near object no. 5, several iron fragments from a fibula were extracted.

The soil at the bottom of the pit was burnt, but this is not an *in situ* cremation, but a secondary burial, even though there were patches of burnt charcoal in the pit.

This one-day archaeological intervention allowed the recording of an exceptional La Tène incineration burial. The two decorated *sica* type daggers indicate that the burial belongs to the Padea-Panaghiurski-Kolonii group (Sîrbu, Borangic 2016). The fibula is very fragmentary, but the recovered elements suggest

a the Latène C fibula type, with a lamellar foot, type 3 of A. Rustoiu's typology (Rustoiu 1997 36–37). Based on the inventory, the grave can be dated to the second half of the II c. BC - first half of the 1st c. BC., although the statistical distribution of wheel and handmade ceramic materials recovered from the nearby settlement allows only a broader dating, III c. BC - I c. BC.

HISTORICAL CONTEXT

The burial practices between the first century BC and the second century AD in the area north of the Danube are characterised by the presence of two different burial traditions (Babeș 1988, Popa 2014, Popa 2018).

The first, consisting of inhumations, is mainly represented by individuals deposited in pits inside or immediately outside the settlements. These individuals are characterised by a very varied burial pattern. The pits contain either one, multiple or parts of individuals, most of which are incomplete and disarticulated and generally lack a burial inventory (Sîrbu 1993, Popa 2014, Popa 2018). Some of the human bones, especially the long bones of the lower limbs, show gnawing marks (Șendroiu, 2023:38) from animals, suggesting that they were deposited in a different place before being placed in the pits.

The second burial tradition is based on flat or tumular incineration graves. These are usually characterised by martial inventory, consisting of mostly offensive military equipment, with the *sica* dagger as the central piece. The tumular graves generally show a richer burial inventory, which reveals a certain hierarchization depending on the number of weapons deposited. The amount of bone in these graves is usually very small, comprising only a few hundred grams and showing a very high degree of fragmentation. The cremation graves belong to the so-called Padea-Panaghiurskii-Kolonii group, which was defined by Zenon Wozniak (1974, 1976). This group was originally located on both sides of the Danube and is characterised by a hierarchical arrangement of weapons (Rustoiu, 2008:162). This group migrated to southwestern Transylvania from the second century BC, where it served as a catalyst for the changes in the funerary landscape north of the Danube during this period (Popa 2018, Șendroiu 2023).

Zenon Wozniak was the first to establish that the typology and number of inventory items in a series of tombs north and south of the Danube, dated between the II c. BC - I c. BC, match a certain pattern (Wozniak 1974, 74–138; 1976: 388–394). These contexts are represented by generally shallow cremation burials, the inventory of which most frequently contains weapon parts: spearheads, La Tène swords, curved knives, shield bosses (Rustoiu, 2005: 110). The difference between the situation in Oltenia, where most of these tombs are found, and that in northern Bulgaria relates only to the construction of the tomb. While in Oltenia they are mostly flat, in Bulgaria they are generally located under tumuli (Rustoiu, 2005: 110). Another series of tombs with grave goods similar to those described by Wozniak was discovered near the Iron Gate Gorge and in southwestern Transylvania (Rustoiu, 2005: 111).

The weapons used throughout the La Tène period and found in graves do not necessarily have a strictly military function, but rather one that indicates the wearer's affiliation to a particular group. It is assumed that the use of certain types of weapons was one of the ways in which the military elite expressed their status in relation to each other and to the rest of the population (Rustoiu Berecki, 2015: 144)

The burial model illustrates the presence of bone fragments from most anatomical regions. The most frequently represented skeletal fragments are the skull, long bone diaphyses, ribs and vertebrae. Although the model shows the presence of most anatomical regions, we generally find only a very small amount of bone. Even when this amount is larger, the osteological material is in a very fragmented state. For this reason, it is often difficult to clearly determine the sex and age of the deceased. This situation indicates a selection of the osteological material present, the human remains being symbolically selected from the pyre before their deposition (Table 1).

The combustion temperature in most of the cases examined is around 800–1000 degrees Celsius, with the bones having a grey to white appearance. The epiphyses, similar to the ribs, vertebrae or pelvic girdle, usually have lower temperatures of around 600–700 degrees Celsius. In some cases, the combustion temperature is higher and is around 1000–1200 degrees Celsius (Șendroiu, 2023: 71).

The hierarchical dimension of the funerary inventories can be observed, based on the number and functionality of the weapons as well as the type of construction (Thurston 2010: 238). The prominence of weapon inventories in cremation burials also suggests that military identity was crucial to the expression of status after death for those who were subjected to this treatment. We observe several inventory categories, generally classified according to the number and functionality of the weapons (Popa, 2018: 181–182). We can therefore speak of a hierarchy within this category, a hierarchy that can be traced back to a vertically organised social group. The connection of this group with the members of the Padea-Panaghiurskii Kolonii (Popa, 2018: 200) is an element that proves the existence of continuity in burial practices between the typical PPK graves in the Danube area and the cremation graves that we find north of the Danube from the second century BC onwards. Considering that tumular and flat cremation burials with martial inventories represent the standard in this period, as they are the only ones to fulfil all the classical characteristics of funerary practices, the deviant burial contexts that often appear in the same settlements as the cremation burials inevitably correspond to a different funerary model and a different approach to identity in their construction. This situation illustrates the applicability of concepts such as hegemonic masculinity as defined by Connell (2006: 77–78) or the model of male habitus proposed by Ramsl (2020: 13).

OSTEOLOGICAL MATERIALS AND METHODS

The analysis process began with the washing of the earth and bones in a 1 mm sieve. The bones were then categorized by anatomical segments with those that could

not be assigned to a specific one being classified as unidentified and separated by size within the category. Differentiation and separation of human bones from animal ones was done on the basis of the shape and microstructure of the cortical part of the bone according to the model illustrated by Byers (2005: 61–72). The temperature and degree of burning were estimated from the colour of the burned bones based on the study by Walker, Miller (2005:216–217). As far as age determination is concerned, it was only possible to mark the individual as an adult, based on the degree of synostosis of the cranial sutures (White *et al*., 1991: 391–393, Figs 18.7-8), mainly due to the small and fragmented state of the bones. In order to create a burial model, the weight of the fragments belonging to the individual anatomical regions of the body was also taken into account, as well as the total weight of the bones recovered from the burial.

ANTHROPOLOGICAL ANALYSIS

The results of the anthropological analysis correspond to the pattern of cremation burials characteristic of this time period. Similar to most finds associated with the La Tène cremation burials north of the Danube, the amount of bone in the grave was very small and there is a marked difference between the anatomical regions of the fragments recovered. The weight distribution of the cremated bone fragments is just under 200 grams (193.15), with the majority of fragments coming from either the skull (68.05) and ≤10 mm unidentified fragments, most of which are from long bone dyaphyses (62.05). Other skeletal segments represented include epiphyses (9.71 grams), ribs (1.12 grams), vertebrae (6.6 grams) and unidentified fragments >10 mm (46.53 grams) (Table 2).

The results of the anthropological analysis showed that the individual was over 30 years old. The age of the individual was determined on the basis of the closure of the cranial sutures present on some of the fragments recovered from the grave. The sex determination is uncertain as there are no sexually dimorphic elements present. The recovered bones are very fragmented, a fact that is consistent with most contemporary cremation burials. There was also a marked difference in cremation temperature between the individual skeletal segments. The pattern is similar to other analysed contexts from the same time period. In most cases, the cranium and the long bones show a higher burning temperature than the other parts of the body such as the ribs and vertebrae, but the high degree of fragmentation is present in all of the analysed anatomical fragments (Fig. 8).

CONCLUSIONS

The results of the anthropological analysis carried out on the fragments from the Letca Veche burial are consistent with the pattern found in most other cremation burials of this chronological horizon north of the Danube and are characteristic of the cremation burials of the Padea-Panaghiurskii-Kolonii group.

This grave matches the pattern found in the PPK group both in the burial inventory, which is centred on martial elements, and in the depositional pattern of the deceased. The small quantity of human bones found here indicates a rather symbolic selection of material from the pyre prior to deposition. The small amount of bone and the high degree of fragmentation did not allow for a clear result indicating an adult individual over 30 years of age. There is no indication of the sex of the individual. By comparison with other cremation burials from the same burial horizon, we could argue that the presence of martial fixtures could be an indication of the presence of a male, but as no clear anthropological conclusion could be drawn, we cannot argue in this direction with certainty.

REFERENCES:

Babeș, M.. 1988. *Descoperirile funerare și semnificația lor în contextul culturii geto-dacice clasice*. SCIVA, 39, 1, p. 3–32.

Byers, S. 2005. *Introduction to forensic anthropology: a textbook [2nd Edition*] New York: Pearson.

Connell, R. 2006. *Der gemachte Mann: Konstruktion und Krise von Männlichkeiten***.** Berlin*:* Springer-Verlag.

Popa, N.C. 2014. *The Quest for Group Identity in Late Iron Age Romania. Statistical Reconstruction of Groups based on Funerary Evidence*. in: Popa and Stoddart (ed.) *Fingerprinting the Iron Age Approaches to Identity in the European Iron Age. Integrating South-Eastern Europe into the Debate,* Oxford: Oxbow Books, p. 108–123.

Popa, N.C. 2018. *Modelling Identities a case study from Iron Age south east Europe*. Cham: Springer International Publishing,.

Ramsl, P. C. 2020. *Diversity of Male Identities in Early and Middle La Tène Period Cemeteries in Central Europe. With contributions from F. Novotny, J. Gretzinger and St. Schiffels, Archaeologica Slovaca Monographiae – Studia XXXIII*.

Rustoiu A. 1997. *Fibulele din Dacia preromană (sec. II î.e.n.– sec. I e.n.),* Bibliotheca Thracodacica, XXII, București.

Rustoiu A. 2005 *The Padea Panaghiurskii Kolonii Group in south western Romania* in Dobrzanska, Megaw, Poleska (ed.) *Celts on the margin, Studies in european cultural interaction 7th century B. C.- 1st century A.D*., p. 108–119.

Rustoiu, A. 2008. *Războinici şi societate în aria celtică transilvăneană. Studii pe marginea mormântului cu coif de la Ciumeşti*. Cluj-Napoca: Mega.

A. Rustoiu A., Berecki S. 2015 *Weapons as symbols and the multiple identities of the warriors. Some examples from Transylvania* în *BUFM*, 79, p. 127–148.

Sîrbu V. 1993. *Credințe și practici funerare, religioase și magice în lumea geto-dacilor*. Brăila: Ed. Istros.

Sîrbu V; Borangic C. 2016, P*umnalul sica în nordul Dunării (~~200 a. Chr – 106 p. Chr.). Semiotica marțială a puterii*. Brăila: Ed. Istros

Șendroiu C. 2023. *Identitate socială în practicile funerare de pe teritoriul Daciei în secolele II a. Chr.-I p. Chr. (*unpublished Doctoral thesis).

White, T. 1991. *Human Osteology*. Cambridge: Academic Press.

Walker P. L; Miller K. P. 2005. *Time, temperature and oxygen availability: an experimental study of the effects of environmental conditions on the color and organic content of cremated bone* în *American Journal of Physical Anhtropology, 40 (222*), p. 216–217.

Wozniak Z. 1974. *Wschodnie pogranicze kultury latènskiej*, Wroclaw-Warszawa-Kraków-Gdansk.

Wozniak Z. 1976. *Die östliche Randzone der Latène Kultur*. *Germania* 54, p. 382–402.

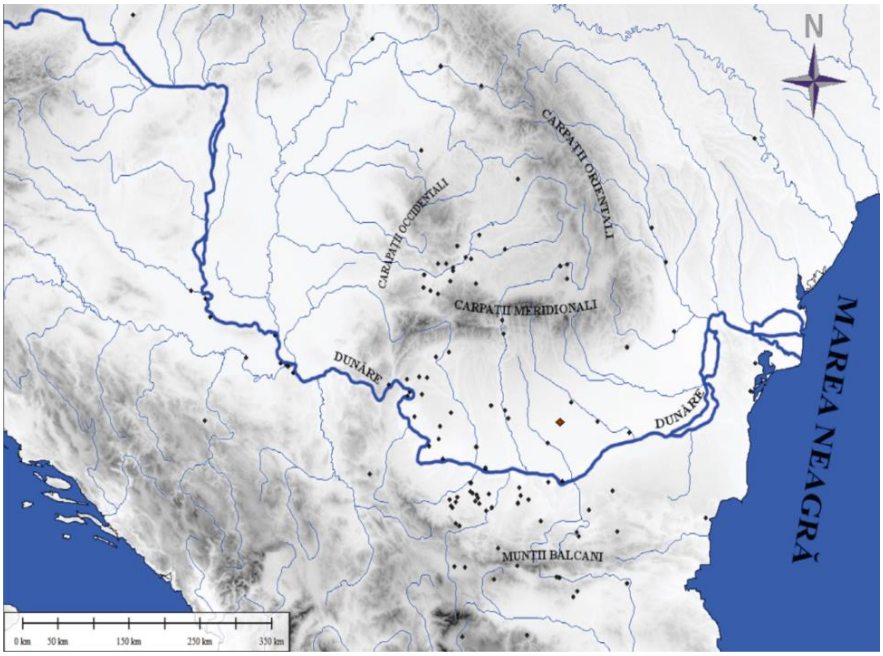

Fig. 1: Map showing the distribution of the Padea-Panaghiurski-Kolonii type finds (modified from Sîrbu, Borangic 2016, fig. 1).

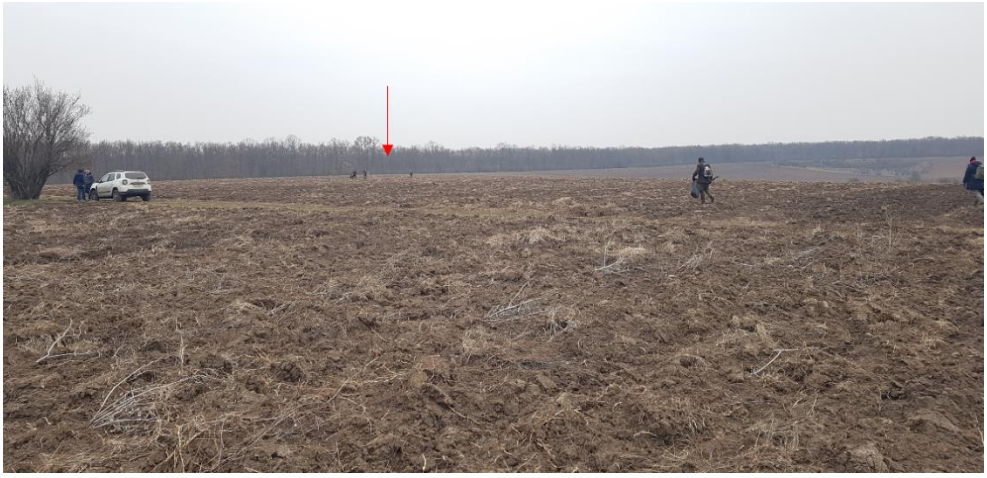

Fig. 2: Photo of the lanscape with the indication of the location of the burial pit.

Fig. 3: Archaeological intervention trench (S.I/2023), and the metal detection pit.

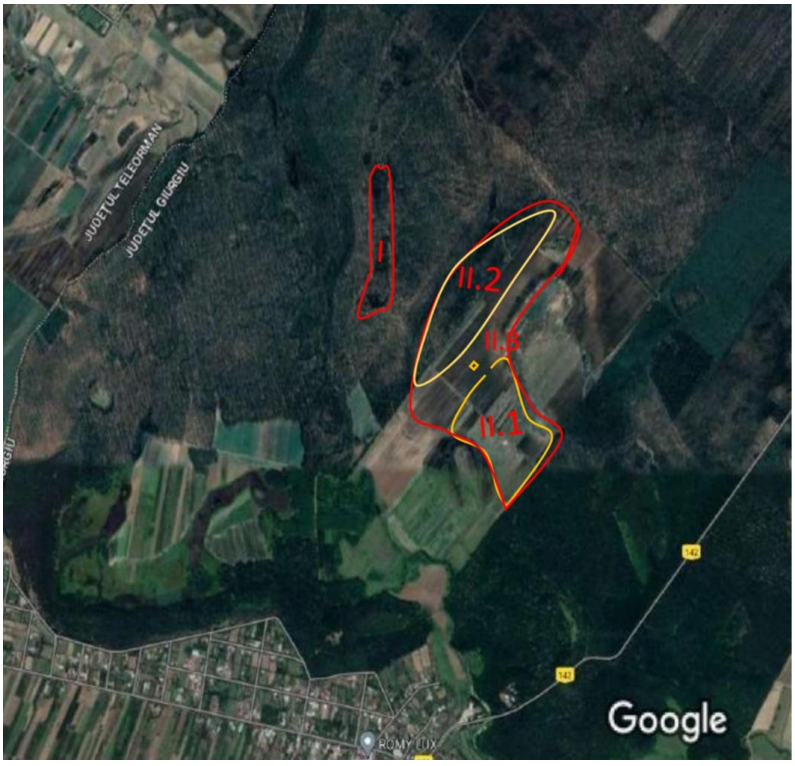

Fig. 4: Satellite map: I-limits of Letca Veche-Tărtăr site, RAN 104065.01, according to CiMEC; II.1 –First habitation nucleus of the new identified site; II.2 – the second habitation core of the settlement; II.3 – Trench I/2023, the incineration grave.

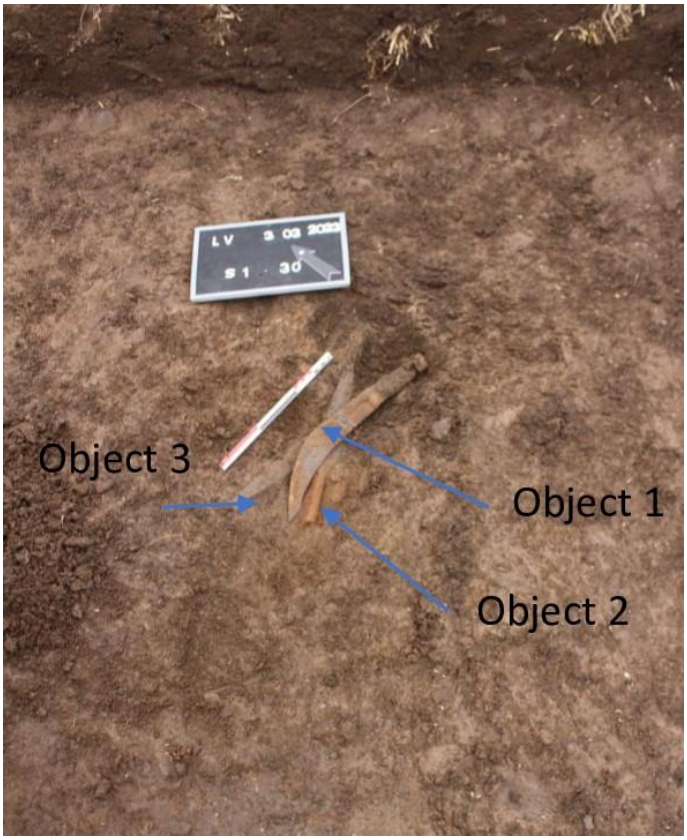

Fig. 5: In situ photo of the inventory objects of the cremation grave.

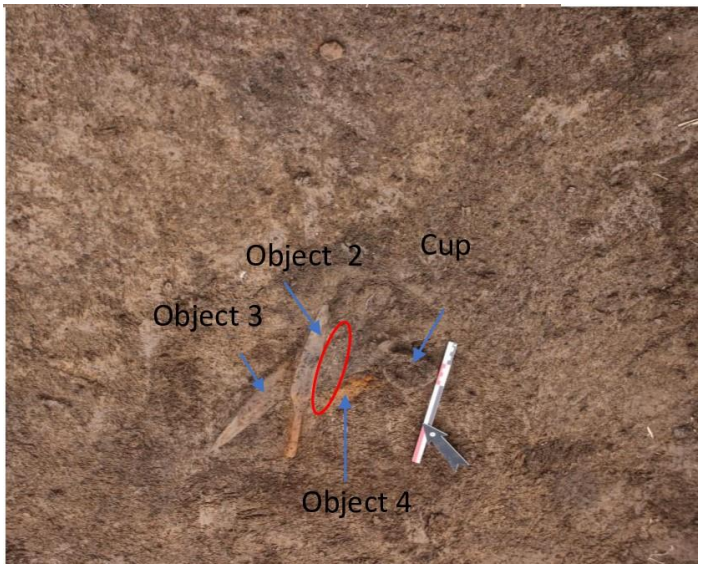

Fig. 6: In situ photo with the human bone fragments marked in red.

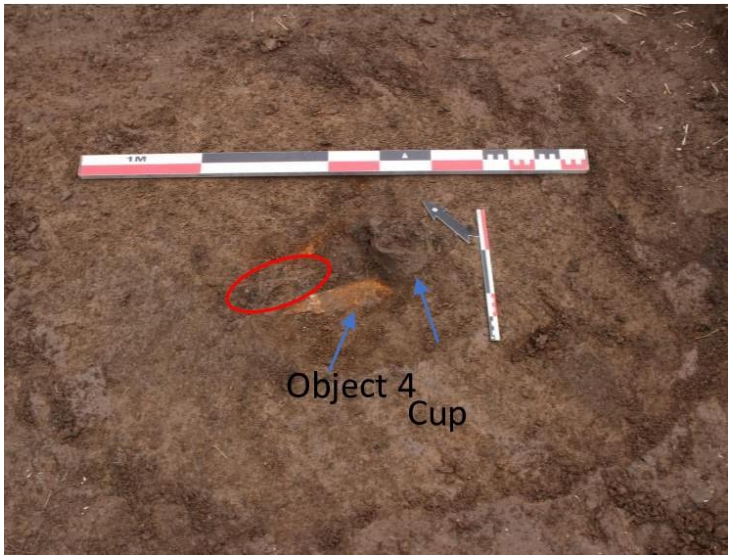

Fig. 7: In situ photo with the human bone fragments marked in red.

Fig. 8: Long bone dyaphises from the Letca Veche burial, photo taken during the analysis.

Table 1.
Comparison between the total bone quantity of the Letca Veche burial and other contemporaneous incineration graves

Grave site and number	**Total bone quantity**
Popești 1992 gr. de est carou 6 M 124?	1716
Popești 1959 T2 S1S2 Cpl 1 cu arsură -1.25 m	43.48

Grave site and number	**Total bone quantity**
Popeşti 1959 T2 cpl. Nr 1 cu arsură în cenuşa de deasupra	80
Celei 1067 M 1 Sub Coltul Doamnei	326
Celei 1967 M 60	98
Celei 1967 M 64	194.5
Celei 1967 M 19	323
Celei 1967 M 1	160
Racoş vas	18.27
Racoş fragmente osteologice vas	112.22
Gothatea 2015 A1 LD3 sit 4 cx 1527 umplutură	17.18
Gothatea 2015 A1 LD3 sit 4 cx 934	212.55
Gothatea 2015 A1 LD3 sit 4 cx 1527 vas 1	4.29
Letca Veche	193.15

Table 2.
Weight distribution by anatomical segments of the bones from the Letca Veche burial

Anatomical segment	**Weight distribution**
cranium	68,05 grams
Epyphyses	9.71 grams
Ribs	1,12 grams
Vertebrae	6.6 grams
Unidentified >10 mm.	46.53 grams
Unidentified ≤10 mm.	62.05 grams
Total	193,16 grams

IMAGES AND TABLES

Fig. 1: Map showing the distribution of the Padea-Panaghiurski-Kolonii type finds (modified from Sîrbu, Borangic 2016, fig. 1);

Fig. 2 Photo of the lanscape with the indication of the location of the burial pit

Fig. 3. Archaeological intervention trench (S.I/2023), and the metal detection pit

Fig. 4. Satellite map: I-limits of Letca Veche-Tărtăr site, RAN 104065.01, according to CiMEC; II.1 –First habitation core of the new identified site; II.2 – the second habitation core of the settlement; II.3 – Trench I/2023, the incineration grave

Fig. 5 In situ photo of the inventory objects of the cremation grave

Fig.6. In situ photo with the human bone fragments marked in red

Fig. 7: In situ photo with the human bone fragments marked in red

Fig. 8. Long bone dyaphises photo from the Letca Veche burial, photo taken during the analysis

Table 1. Total bone quantity comparison between Letca Veche burial and other contemporaneous burials

Table 2. Table 2 Weight distribution by anatomical segments of the bones from the Letca Veche burial

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RAPPORT DE RECHERCHE / RESEARCH REPORT

FLOW AND PROCRASTINATION IN THE ACADEMIC REALM: A PILOT STUDY

DIANA MIHAELA TURCU [1]

Procrastination is a widespread phenomenon among students and it has been increasingly studied lately. As it has been shown to have an impact on one's wellbeing and academic performance, finding elements that could help predict or manage it is of great importance. Therefore, exploring relationships between procrastination and other elements from a student's life can reveal helpful insights. In this sense, this pilot study aimed at investigating a potential relationship between flow and procrastination in academic contexts, as academic activities should be flow-inducing, exciting and fulfilling for students. In order to examine the correlations between the two, a questionnaire was conducted among a small group of university students. The results indicate no significant correlations between flow and procrastination in academic contexts, therefore occurrence of flow did not show a potential of lowering the likelihood of procrastinating behavior.

Keywords: procrastination, flow, students, studying, academic.

INTRODUCTION

Procrastination in the academic sphere:

Procrastination is a widely spread phenomenon among students (Steel P, 2007) and a growing research topic in the scientific literature. In common terms, procrastination is the act of unnecessarily delaying a task. While at first it might sound similar to laziness, a behavior that has never been considered a virtue in human societies, the mechanisms underlying procrastination are far more complex.

Previous scientific literature does not uniformly define procrastination – as Klingsieck (2013) indicates, not in all academic papers procrastination is explained as a dysfunctional, detrimental form of delay. The working definition that will be used in this study describes procrastination as „the voluntary delay of an intended and necessary and/or [personally] important activity, despite expecting potential negative consequences that outweigh the positive consequences of the delay" (Klingsieck K. B., 2013). Another aspect worth mentioning is that procrastination

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can be either sporadic or chronic (Schouwenburg H C., 2004), therefore the phenomenon is harder to be thoroughly observed and analyzed. This paper will focus on individuals who show chronic procrastinatory behaviors.

Studying such phenomena affecting both the future and the actual working population all around the world should be an important research topic, as significant findings on their causes and effects can be especially helpful in building more harmonious and sustainable societies. Interventions on procrastination can both directly and indirectly improve a population's well-being. Not only should such interventions result in happier and healthier individuals, but they could lead to completing school or work tasks more efficiently as well, meaning that would take fewer working hours to support a society's needs. From this point, the possibility of political actions that can be taken to reduce the legal working hours per week limit rises, potentially contributing to a society's well-being.

As for the primary causes of procrastination, Steel and Ferarri (2013) identify self-regulation failure – a concept described by Baumeister and Heatherton (1996) – as the main reason why procrastination appears, whereas another approach presents procrastination as a motivational failure (Steel *et al*., 2018). Some of the factors that are associated with procrastination include: contextual distractions, aversiveness of the given task, lack of energy and late deadlines (Svartdal and Løkke, 2022), fear of failure and perfectionism (van Eerde, 2003). Moreover, Steel *et al*. (2018) showed that routines and planning might help in managing procrastinating behaviors.

Procrastination is a widespread phenomenon in universities, as more than half of students procrastinate when it comes to academic activities (Steel, 2007). The effects of this behavior have been proven to have a negative impact on one's well-being (Svartdal and Løkke, 2022) and academic performance (Alaya *et al*., 2021). It is also associated with unhealthy lifestyle patterns and mental health problems (Johansson *et al*., 2023).

The flow zone:

Flow, as psychologist Mihaly Csikszentmihalyi describes it, is an autotelic experience, a state of mind resulting from doing an activity for its own sake. Therefore, flow occurs when "psychic energy – or attention – is invested in realistic goals, and when skills match the opportunities for action. The pursuit of a goal brings order in awareness because a person must concentrate on the task at hand and momentarily forget everything else" (Csikszentmihalyi, 2008: pg. 6). A flow experience is usually characterized by full immersion in the pursued activity, instant auto-feedback, a strong sense of control and a sense of fulfillment after the activity ends (Csikszentmihalyi, 2008: pg. 43–70).

As optimal experiences bring pleasure to the individual, making efforts towards achieving this state in academic contexts might be a good strategy for improving their well-being, especially because they spend a significant amount of their time either attending classes, studying or completing tasks for their classes.

The scientific literature analyzing correlations between procrastination and flow in university students is limited and the findings are quite divided – on the one hand, flow seems to be a relevant predictor of procrastination (Kim and Seo 2013; Lee 2005), on the other hand, the occurrence of flow proved to be irrelevant in relation to procrastinatory behaviors (Sumaya and Darling, 2018). The conclusions of this comparison indicate the lack of a well-rounded methodology that can be used for analyzing the relationship between these 2 variables, a problem that might arise from the abstract and complex definitions of these concepts, along with the difficulty in measuring their occurrence through self-report tools.

The purpose of the study:

The paper aims to analyze the relationship between experiencing flow when pursuing academic activities and procrastinating behaviors when completing academic tasks while identifying directions for future research. Having these 2 objectives in mind, the questions this paper will answer are:

1. Is there a statistically relevant correlation between academic procrastination and flow when engaging in academic activities?
2. Are students that consistently experience flow in academic contexts less likely to procrastinate?

MATERIALS AND METHODS

In order to identify correlations between optimal experiences and procrastination, in April 2023 a questionnaire was conducted among a group of 33 university students, aged between 18 and 25 years old. The questionnaire was created on the Google Forms platform, and it was distributed through official groups of student' associations. The convenience sampling method was used to gather data, as each student could complete the survey anonymously if they were willing to take part in the study.

The structure of the questionnaire brings together 3 main parts. The first part gathered demographic information about the participants and the items covered the following aspects: age, gender, background (rural/urban) and the study cycle they were enrolled in at that time (Bachelor, Master, PhD). The second part of the questionnaire targeted academic procrastination. It consisted of a set of self-report items on a 5-point Likert scale, in which the participants reported the frequency of procrastinatory behaviors when completing academic tasks. The scale started from 1 = NEVER and progressed until 5 = ALWAYS. The participants had to rank the given sentences on this scale according to the level to which they identify with it. Finally, the last part consisted of items about experiencing flow in academic contexts. These items were structurally identical to the ones from the previous part of the questionnaire.

When it comes to both procrastination and flow, their answers were then grouped into new variables, which measured how often the did phenomena of procrastination and flow occur for each participant. The occurrence was

calculated by averaging the answers for each item and comparing it to what represented 80% of the maximum possible variable (minimum 4 points out of 5), meaning that their answers regarding procrastination or flow should not be lower than "OFTEN". For example, the values registered in one's answers at the procrastination items were averaged, and if the result was equal or it exceeded the value of 4 (80%), the behavior was considered to be consistently occurring in that individual's case.

The gathered data was exported into the JASP 0.17.3 statistical analysis software (Copyright 2013–2023 University of Amsterdam). All subscales either registered an acceptable or a good Cronbach's internal consistency coefficient ($0.70 < \alpha < 0.90$). Firstly, descriptive and frequency analyses on demographic, procrastination and flow data were extracted, followed by a Mann-Whitney Independent sample T-test, which was meant to highlight any significant differences between male and female respondents. Finally, Pearson's Coefficient Correlations were run to investigate the relationship between academic procrastination and flow in academic activities.

RESULTS

Demographics and gender differences:

The sample used for this analysis consisted of 33 respondents who were pursuing their studies at universities from Bucharest, Romania. The descriptive analyses reveal that the studied group is entirely urban, has an average age of 20 years (SD = 1.521) and that all of its members were pursuing a Bachelor degree.

When it comes to gender, the current sample does not accurately represent the standard distribution – out of 33 participants, 60.606% of them were female and only 39.394% of them were male. No other genders were indicated by the participants.

Descriptive Statistics

	AGE
Valid	33
Missing	0
Mean	20.000
Std. Deviation	1.521
Minimum	18.000
Maximum	25.000

Figure 1: Descriptive statistics of the sample, with regards to the age variable.

The results of the Independent Sample T-test show no difference between the male and female groups with regard to the occurrence of flow and procrastination in academic contexts (Figures 2 and 3).

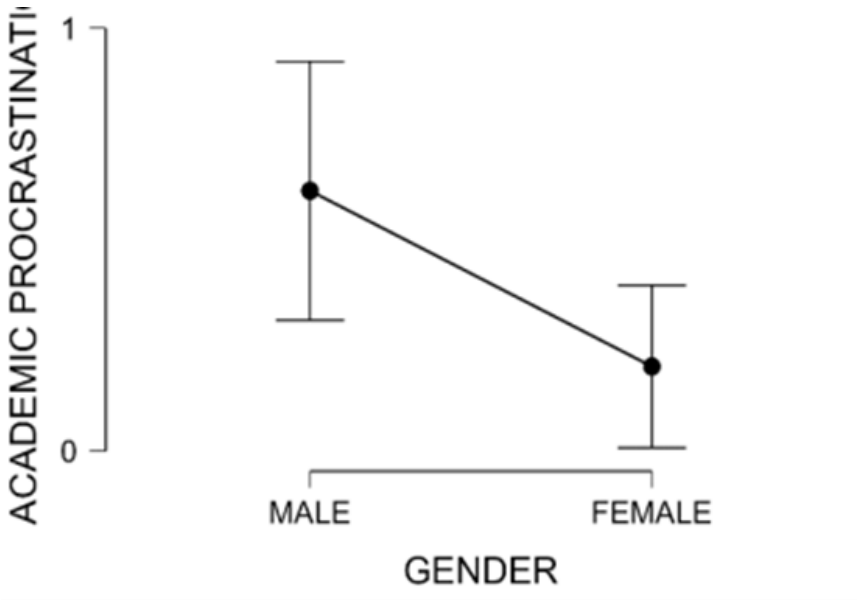


Figure 2: Descriptive Plots (Academic procrastination – male and female respondents).

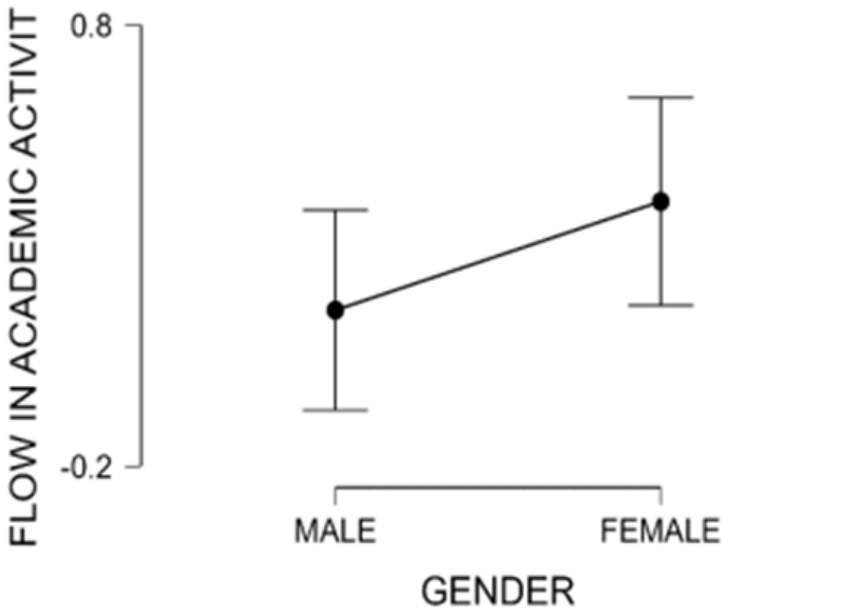


Figure 3: Descriptive Plots (Flow in academic activities – male and female respondents).

Academic procrastination:

According to the results, about 36% of the group show consistent academic procrastination (Figure 4). A key aspect of this analysis is that more than 36% of the students taking part in the study reported academic procrastination, but their answers reflect occasional, sporadic procrastination in academic contexts, not a chronic behavior.

Frequencies for ACADEMIC PROCRASTINATION

ACADEMIC PROCRASTINATION	Frequency	Percent	Valid Percent	Cumulative Percent
INCONSISTENTLY	21	63.636	63.636	63.636
CONSISTENTLY	12	36.364	36.364	100.000
Missing	0	0.000		
Total	33	100.000		

Note: Item value equal to or exceeding 80% was considered a representation of CONSISTENT occurrence of the phenomenon.

Figure 4: Frequencies for the Academic Procrastination variable.

Flow in academic contexts:

As it can be observed in Figure 5, 30.3% of the students taking part in the study show consistent flow experiences when they engage in academic activities. Similarly, the group also included students who reported inconsistent flow experiences in academic contexts.

Frequencies for FLOW IN ACADEMIC ACTIVITIES

FLOW IN ACADEMIC ACTIVITIES	Frequency	Percent	Valid Percent	Cumulative Percent
INCONSISTENTLY	23	69.697	69.697	69.697
CONSISTENTLY	10	30.303	30.303	100.000
Missing	0	0.000		
Total	33	100.000		

Note: Item value equal to or exceeding 80% was considered a representation of CONSISTENT occurrence of the phenomenon.

Figure 5: Frequencies for the Flow in academic activities variable.

Flow and procrastination in academic contexts:

However, despite the shared proportion of participants who experience both flow and procrastination, no relevant relationship between these two variables has been found. As seen in Figure 6, Pearson's Correlations test revealed no statistically significant correlations between experiencing flow in academic contexts and academic procrastination, therefore it cannot be argued that the occurrence of flow prevents procrastination.

The above interpretation of the results is based on the variables described in the methodology, meaning that the occurrence of this phenomenon was described as consistent if its score was equal to or exceeded 80% of the maximum value.

Pearson's Correlations

	Pearson's r	p
FLOW IN ACADEMIC ACTIVITIES - ACADEMIC PROCRASTINATION	-0.087	0.315

Note. All tests one-tailed, for negative correlation.
* p < .05, ** p < .01, *** p < .001, one-tailed

Figure 6: Correlations between Flow in academic activities & Academic procrastination.

CONCLUSIONS

The results of this study indicate the following:

– 1 in 3 students who participated in the study consistently procrastinates when it comes to academic tasks.
– About 30% of students that participated in the study experience flow in academic contexts.
– There is no significant correlation between academic procrastination and flow experiences in academic contexts.
– Consistently experiencing flow in academic contexts does not show a potential in lowering the likelihood of procrastination behavior.

These findings contribute to the literature as a particular case, a base for further study, as the sample used for this study is too small and inaccurate for its questioning to generate data that could be generalized to an entire population. Studying academic procrastination and flow in academic contexts without taking into account any other factors such as motivation has proven to be an incomplete, simplistic approach. The extensive study following the current one will include more factors in the analysis and another data-gathering methodology will be chosen, everything accompanied by a broader sample.

DISCUSSION

Even though the results show no significant correlation between flow experiences and procrastination behaviors, they do not also show that the two necessarily exclude each other. Therefore, it can be concluded that students might reach optimal experiences when they study even though they procrastinate, as results show that achieving flow does not assure a drop in the occurrence of procrastination behaviors. In this sense, Seo (2011) reveals that procrastination might enable students to achieve optimal experiences, as they are forced to be more focused and efficient when they are pressured by the deadline. Seo also stated that

if students succeed in remembering the information, procrastination might lead to positive reinforcement, even though it can affect their performance compared to not procrastinating.

The research on correlations between experiencing flow in academic contexts and the occurrence of academic procrastination is quite limited. When comparing the findings of the current pilot study to the existing literature, differences can be found when it comes to the factors included in the analysis and the results. While some authors have found that experiencing flow and engaging in self-regulated learning are significant factors in predicting the occurrence of active procrastination (Kim and Seo 2013), another paper reveals that high levels of procrastination are associated with a low incidence of flow and low levels of self-determined motivation (Lee, 2005).

Another study using an alternative methodology (i.e., the experience sampling method) revealed that the students who participated in the study showed high levels of procrastination regardless of whether they experienced flow or not (Sumaya and Darling, 2018). However, the same paper revealed that the flow-experiencing group got significantly higher grades and was more accurate in predicting their grades.

The sample used in this study is non-representative and it was shaped solely by proximity and convenience, as this pilot study served as a test for the methodology used. An extensive study will be conducted in the future based on the findings of the current paper and with a larger, more accurately representing group of participants. Moreover, the following study will also focus on the motivational and self-esteem factors when it comes to flow and procrastination and it will consist of longitudinal monitoring of the subjects. As the current sample is quite limited and it does not reflect actual demographics, the conclusions only reflect the particular results of the students involved in this study. These findings serve as a base for further research on this topic, but they should not be generalized to an entire population.

ACKNOWLEDGEMENTS

There are no conflicts of interest regarding the material.

REFERENCES

Alaya, M. Ben, U. Ouali, S. Ben Youssef, A. Aissa, and F. Nacef. 2021. Academic Procrastination in University Students: Associated Factors and Impact on Academic Performance. *European Psychiatry* 64 (S1): S759–60. https://doi.org/10.1192/j.eurpsy.2021.2013.

Baumeister, Roy F., and Todd F. Heatherton. 1996. Self-Regulation Failure: An Overview. *Psychological Inquiry* 7 (1): 1–15. https://doi.org/10.1207/s15327965pli0701_1.

Csikszentmihalyi, Mihaly. 2008. *Flow: The Psychology of Optimal Experience*. 1st ed. Harper Perennial Modern Classics.

Eerde, Wendelien van. 2003. A Meta-Analytically Derived Nomological Network of Procrastination. *Personality and Individual Differences* 35 (6): 1401–18. https://doi.org/10.1016/S0191-8869(02)00358-6.

JASP Team. 2024. 'JASP'. https://jasp-stats.org/.

Johansson, Fred, Alexander Rozental, Klara Edlund, Pierre Côté, Tobias Sundberg, Clara Onell, Ann Rudman, and Eva Skillgate. 2023. Associations Between Procrastination and Subsequent Health Outcomes Among University Students in Sweden. *JAMA Network Open* 6 (1): e2249346–e2249346. https://doi.org/10.1001/jamanetworkopen.2022.49346.

Kim, Eunkyung, and Eun Hee Seo. 2013. The Relationship of Flow and Self-Regulated Learning to Active Procrastination. *Social Behavior and Personality: An International Journal* 41 (7): 1099–1113. https://doi.org/10.2224/sbp.2013.41.7.1099.

Klingsieck, Katrin B. 2013. Procrastination. *European Psychologist* 18 (1). https://doi.org/10.1027/1016-9040/a000138.

Lee, Eunju. 2005. The Relationship of Motivation and Flow Experience to Academic Procrastination in University Students. *The Journal of Genetic Psychology* 166 (1): 5–15. https://doi.org/10.3200/GNTP.166.1.5-15.

Schouwenburg, Henri C. 2004. Procrastination in Academic Settings: General Introduction. *Counseling the Procrastinator in Academic Settings.*, 3–17. https://doi.org/10.1037/10808-001.

Seo, Eun Hee. 2011. The Relationships Among Procrastination, Flow, and Academic Achievement. *Social Behavior and Personality: An International Journal* 39 (2): 209–17. https://doi.org/10.2224/sbp.2011.39.2.209.

Steel, Piers. 2007. The Nature of Procrastination: A Meta-Analytic and Theoretical Review of Quintessential Self-Regulatory Failure. Psychol Bull 133: 65-94. *Psychological Bulletin* 133 (January): 65–94. https://doi.org/10.1037/0033-2909.133.1.65.

Steel, Piers, and Joseph Ferrari. 2013. Sex, Education and Procrastination: An Epidemiological Study of Procrastinators' Characteristics from A Global Sample. *European Journal of Personality* 27 (1): 51–58. https://doi.org/10.1002/per.1851.

Steel, Piers, Frode Svartdal, Tomas Thundiyil, and Thomas Brothen. 2018. Examining Procrastination Across Multiple Goal Stages: A Longitudinal Study of Temporal Motivation Theory. *Frontiers in Psychology* 9 (April). https://doi.org/10.3389/fpsyg.2018.00327.

Sumaya, Isabel C., and Emily Darling. 2018. Procrastination, Flow, and Academic Performance in Real Time Using the Experience Sampling Method. *The Journal of Genetic Psychology* 179 (3): 123–31. https://doi.org/10.1080/00221325.2018.1449097.

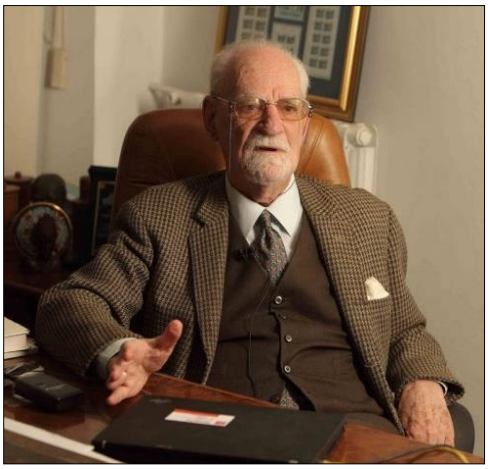
Svartdal, Frode, and Jon Løkke. 2022. The ABC of Academic Procrastination: Functional Analysis of a Detrimental Habit. *Frontiers in Psychology* 13 (November). https://doi.org/10.3389/fpsyg.2022.1019261.

Legend of figures:

Figure 1 – Descriptive statistics of the sample, with regards to the age variable.
Figure 2 – Descriptive Plots (Academic procrastination – male and female respondents).
Figure 3 – Descriptive Plots (Flow in academic activities – male and female respondents).
Figure 4 – Frequencies for the Academic Procrastination variable.
Figure 5 – Frequencies for the Flow in academic activities variable.
Figure 6 – Correlations between Flow in academic activities & Academic procrastination.

In Memoriam

CONSTANTIN BĂLĂCEANU-STOLNICI
(1923–2023)



Professor Constantin Bălăceanu-Stolnici's prodigious academic career is well known for his work as a neurologist for the Bucharest hospitals of Colentina (1952–1957), "Ion Cantacuzino" (1957–1965), and "Gheorghe Marinescu" (1965–1970). Besides, Bălăceanu-Stolnici worked in geriatric medicine at the National Institute of Gerontology (1974–1993), which he coordinated as a director (1991). He also conducted didactic work at the "Carol Davila" University of Medicine in Bucharest (which he graduated in 1947 and as a PhD in 1948), in the fields of anatomy (1944–1949) and neurology (1949–1952), as well as at the University of Bucharest (the Faculty of Philosophy), in cybernetics (1971–1972).

He wrote several books, ones of them in neuroscience (*Équilibre du corps et de la pensée* [co-signed with R. Bizé], *Neurogeriatrics*, *Elements of Anatomy and Physiology of Nervous System*, *Elements of Neurocybernetics*), and others in the history of religious thought (*Introduction to the Study of Judaic and Christian Kabala*, *The Genesis and Evolution of Magic Thought* [co-signed with Magdalena Berescu]).

As regards the Francisc I. Rainer Institute of Anthropology, Constantin Bălăceanu-Stolnici (an honorary member of Romanian Academy) is to be remembered as its honorary Director (1998–1923). Constantly described as the "last authentic aristocrat" (based on his more-than seven-century ascendance from the Romanian noble family of Bălăceni), Constantin Bălăceanu-Stolnici was for a 25-year period of his life actively involved in the scientific programs of the Rainer Institute. Indeed, Academician Bălăceanu-Stolnici presided at the weekly-held seminars of our institution (which, alongside the areas of his medical specialization, he contributed with highly consistent comments thematically ranging from the religiosity of the Neanderthals and the cave art of Upper Paleolithic to Gnosticism and Hesychasm).

Constantin Bălăceanu-Stolnici was also (along with Dr. Cristiana Glavce) the director of our institute's doctoral program in Medicine, with a coordination

of 22 doctoral and four postdoctoral theses. It is worth mentioning that Professor Constantin Bălăceanu-Stolnici was present during most of the conferences and national symposia organized by the Rainer Institute including (for instance) the Conferences of Francophone anthropologists (1998, 1999), the Francisc I. Rainer National Symposium (continuously held in the 2010s and 2020s by the Academic Society of Anthropology), and also the sessions that the Ploieşti Museum of Science of Nature annually hosted in Prahova County.

Much more than a "honorary" presence, Academician Constantin Bălăceanu-Stolnici identified himself with the destiny of Francisc I. Rainer Institute of Anthropology, bringing his direct support to the governmental recognition of its (original) quality of "institute", in 2006 (instead the denomination of a "research centre" imposed by authorities from the 1950s on). Older and younger generations of researchers in our institution, as well as many doctoral students and external collaborators of the Rainer Institute, will perpetuate the memory of Professor Bălăceanu-Stolnici and his generous contribution to the development and achievements of contemporary Romanian anthropology.

Marin Constantin

In Memoriam

ELEONORA ILEANA LUCA
(1949–2023)

Pendant plus de 40 anes (de 1980 à 2023), a travers des différents contextes sociopolitiques et toujours aux côte de nombreuses générations de chercheurs, Dr. Eleonora Luca a représenté l'une des meilleurs repères de professionnalisme et abnégation de l'Institut d'Anthropologie «Francisc I. Rainer». Née Dumbrăveni (le Département de Sibiu), le 16 Février 1949, *Nora Luca* (comme elle était cordialement appelée par ses collègues et amis) a poursuivi les cours de la Faculté de Biologie de l'Université de Bucarest (1967–1972, avec une thèse de licence en anatomie comparée), avant de devenir enseignante dans le cycle secondaire, en Bistriţa-Năsăud (1972–1980). Depuis 1980, elle s'est dédiée à l'anthropologie biologique et médicale dans le Département spécialisée du Centre de Recherches Anthropologiques de Bucarest, en s'engageant avec autorité et enthousiasme dans des diverses directions d'investigations parmi lesquelles l'étude du développement physique des enfants et des adolescents, les caractères de l'héritabilité et l'écologie de l'urbanisation. En collaboration avec ses collègues bio-anthropologues et socio-anthropologues, E. Luca a entrepris des enquêtes complexes de terrain dans des régions d'Alba, Argeş, Braşov, Bucarest, Buzău, Constanţa, Gorj, Sibiu, Teleorman et Vrancea, à des approches méthodologiques incluant l'anthropométrie, la recherche morpho-physionomiques et plus de 300 expertises sur la filiation.

Notre collègue a prouvé ses qualités remarquables de coordonateur ou collaborateur pour des contrats déroulés en partenariat (dans les années 1990–2005) avec des institutions prestigieuses comme le Musée d'Histoire Naturelle «Grigore Antipa», l'Institut National de Recherche Medico-Militaire «Ion Cantacuzino» et l'Académie Roumaine.

E. Luca a travaillé aussi comme professeure associée à l'Université Ecologique de Bucarest (1992–1998) et à l'Université de Ouest de Timişoara (où, entre 2003–2005 a coordonné un nombre de cinq thèses de licence en Anthropologie).

Eleonora Luca a obienu son doctorat en Médicine en 1997 (sous la coordination de Victor Săhleanu et Cristiana Glavce) avec une thèse portant sur «La Variabilité des certains caractères poli-factoriels chez des familles de populations roumaines».

Une contribution majeure d'E. Luca pour l'anthropologie roumaine consiste dans son travail pour la série d'ouvrages l'*Atlas Anthropologique de Munténie* (1999), *Atlas Anthropologique de Transylvanie* (2005), *Atlas Anthropologique de Moldavie* (2011) et l'*Atlas Anthropologique de Romanie* (le seconde volume, 2012).

Eleonora Luca a publié plus de 150 articles et études (dans les revues *Studii şi Cercetări de Antropologie* et particulièrement *Annuaire Roumain d'Anthropologie*, qu'elle a coordonnée comme éditeur spécialise en anthropologie physique, de 2014 à 2023). De même, notre collègue a constamment soutenu des présentations scientifiques spécialisées dans le cadre de symposions organisés par l'Institut d'Anthropologie (notamment le Symposion National «Francisc I. Rainer» et les sessions «La Nature et l'Homme» du Musée des Sciences Naturelles Prahova).

L'implication très active d'E. Luca dans la vie scientifique, au niveau nationale de sa discipline est pleinement mise en lumière par ses affiliations à des structures socio-professionnelles comme la Commission d'Anthropologie de l'Académie Roumaine et la Commission d'Expertise de Paternité et de Maternité, de même que la Société Nationale de Génétique.

Tout au long de sa vie, Dr. Eleonora Luca a su exercer sa profession avec compétence, élégance et dignité – seulement pour sa proprie cariére, mais surtoutpour ses collégues et sa discipline qu'elle a toujours respectée et aimée. On ne l'oubliera jamais.

Marin Constantin

Book review Ștefan Dorondel & Stelu Șerban (Eds.), *A New Ecological Order: Development and the Transformation of Nature in Eastern Europe*, Pittsburgh, PA: University of Pittsburgh Press, 2022, x + 281 pp., ISBN: 9780822947172.

There is no other way but to acknowledge how little we know about the environmental history of Eastern European peripheral and semi-peripheral regions. Until now, two other collective works stand out for bringing together a cohesive transnational perspective on the margins of the European continent, showing the differences and particularities of the transformation of the natural environment during multiple historical periods and political regimes (see for instance Doubravka Olšáková, 2016; Hrvoje Petrić and Žebec Šilj, 2017). Henceforth, Ștefan Dorondel and Stelu Șerban's *A New Ecological Order* skilfully adds new debates to the scholarship and opens up uncharted terrain by showing the continuities and ruptures of state-led modernization projects, which were involved in the "correction" of nature.

Extremely important for those unfamiliar with the history of Eastern European regions, the volume goes beyond the one-way circulation of knowledge and demonstrates that Western scientific ideas, technologies, and expertise often clashed or have been accommodated with expertise coming from the East. In doing so, by focusing on no more than 170 years, the volume explores from both a historical and ethnographic perspective, the role played by politicians, state planners, bureaucrats as well as experts such as engineers, agriculturalists, geographers, biologists, foresters, botanists and architects, in shaping ideas about the transformation of the natural landscape. Moreover, all these historical agencies are doubled by the documentation of the role played by non-human species such as goats, jackals and muskox, and traced in relation to international, regional and national state building agendas, serving in this way either Soviet or capitalist economic interests. In order to make sense of the multiple themes included, most of the individual contributions follow the well-known methodological approach of "high modernism" proposed by political scientist James Scott (1936–2024) in 1998, with the aim of explaining how science and technology side by side with state economic interests intervened in the transformation of the natural environment.

The volume is thematically divided into three parts, benefiting from various maps and pictures as well as an introduction written by the two editors that sets the theoretical apparatus for the following eleven contributions. The first part entitled "planning territory" begins with a chapter signed by Dragana Ćorović and touches upon the transformation of Belgrade's urban environment up until the First World War. The next two chapters, authored by George Vlachos and the one co-authored by Ștefan Dorondel and Anna Oleneko, focuses on how Macedonian swamps and Ukrainian wetlands respectively, have been reclaimed and given new purposes by Greek and Russian governmental interventions with the aim of controlling the environment either for national state-building agendas or by subverting it to Soviet economic interests. In both cases, engineers driven by the "manifest of efficiency and efficacy" (p.46), intervened in taming the swamps and the previously so-called "unproductive wetlands" aiming to transform the social and ecological logic into agricultural productive fields and industrial progress.

The second part, entitled "nature, economy and experts", turns the focus to botanists, and hydraulic engineers. In doing so, the fourth chapter written by Ágota Ábrán greatly shows the ways in which inter-imperial peripheral regions such as Transylvania were integrated into the capitalist economy. Analyzing the evolution and network of the Kolozsvár medicinal plant station, Ágota highlighted how the intervention of urban scientists worked out the transformation of both the local peasant botanical folk knowledge and surrounding green weeds, and translated them into medicinal plants and profitable, money-making commodities and productive gatherers. In chapter five, Stelu Șerban and Ștefan Dorondel investigate from a comparative perspective the regulation of the Danube River between 1900 and 1940 by the Romanian and Bulgarian authorities. This chapter insists on the

differences in administration by the two riparian states, the first making use of Western European expertise while the latter due to the lack of funds was carried by the local Bulgarian technocracy. They show how the construction of levees not only prevented the flooding of Danubian plains and how these were used for land reclamation but also highlights how scientists and technocratic elites attempted to connect these works to the national irrigation and hydroelectric power system. This neatly connects with the following chapter in which Jiří Janáč traces the "hydraulic bureaucracy" of Czech engineers from the 1890s to the 1960s, while uncovering the history of water management dating from the Habsburg administration up to Soviet scientists' holistic approach to nature. In many ways, the final chapter of the second part transcends the geographical limitations of Eastern Europe; however, it further traces the political intervention in nature by Soviet and post-socialist environmental engineering of rivers in the regions of Kyrgyzstan and Tajikistan. Hence, Jeanne Féaux de la Croix and Flora Roberts' contribution looking at "big dam biographies" demonstrates how the construction of hydropower went hand in hand with Soviet social engineering plans.

The third part, called "imagining new nature" turns to the examination of forests and several non-human species. In chapter eight, Hande Özkan's great contribution shows how various conflicting narratives over the environment clashed in the Ottoman Empire. For instance, Orientalising views put forward by Western foresters, while praising the beauty of trees and establishing verdure in opposition to aridity as a civilizing trope, portrayed the local rural population's management of nature as barbaric and further criminalizing their activity and urged for the productive and efficient use of forests. Another well-documented case study, spanning from the period of the Romanov Empire to the present day, is carried out by Eunice Blavascunas on the famous Białowieża forest. The conflict that aroused after the establishment of the famous Białowieża National Park, between Catholic Polish and Orthodox Byelorussian foresters was far from closed during the interwar period. In turn, it paved the way not only to new tensions over timber exploitation during the communist administration but soon became a reservoir for feeding the ultra-right Polish violence and nationalism, who together with foresters, identified as enemies of the nation various so-called "ecoterrorists" among the environmental activists, LGBTQ activists, vegetarians, and refugee rights activists. Chapter ten by Vladislava Vladimirova turns to the domestication of non-human species of muskox in Siberia, which raised a series of debates between state administration and the traditional management of the environment by local Evenki populations. The final chapter goes beyond the previous methodological investigations and deploys a biosemiosis-stimulated approach for the study of Bulgarian environmental change by focusing on the relationship between the golden jackal and the riparian population living along the Danube River.

Although the title of the volume pushes the reader to think of works dealing with the history of ecology and nature conservation, however besides some of the few references related to the Czech Nature Protection Commission (pp.136–140) and the Polish management of the Białowieża National Park (pp.205–206), the development, conflicts and collaboration between Eastern European ecologists in terms of nature protection were not included. Important in many ways, several authors have put much effort in writing in an ecological way about their case studies, explaining the destabilization of biodiversity by modernization projects and the ways in which the commons were taken over by rational planning. Still, other analytical approaches such as "ecology of the poor" or "weapons of the weak", highlighting instances of peasants and non-human resistance to state intervention, might have been beneficial. Nevertheless, the work serves well as guidance and introduction for future research that continues to explore all these debates.

Overall, *A New Ecological Order* greatly connects multiple case studies of various understudied regions with marvelous chronological depth and provides in this way, an important and well-documented contribution to the scholarship of Eastern European environmental history. In doing so, the editor's Ștefan Dorondel and Stelu Șerban have skilfully put together an extremely difficult task, that is making coherence of the ways in which state science and technology subverted and made use of the natural environment, in its continous-deceiving run toward domination, resource extraction and economic growth.

REFERENCES

Olšáková, Doubravka, (ed.) 2016, *In the Name of the Great Work: Stalin's Plan for the Transformation of Nature and Its Impact in Eastern Europe*. New York, Berghahn Books.

Petrić, Hrvoje and Žebec Šilj, Ivana (eds.) 2017, *Environmentalism in Central and Southeastern Europe: Historical Perspectives*. Lanham, Lexington Books.

Scott, James C. 1998, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven, Yale University Press.

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